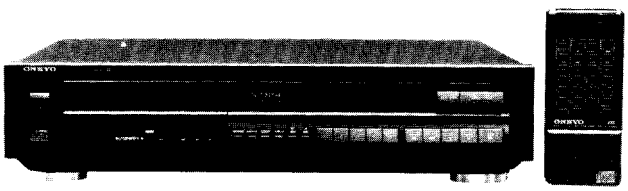
REF. NO. 3391

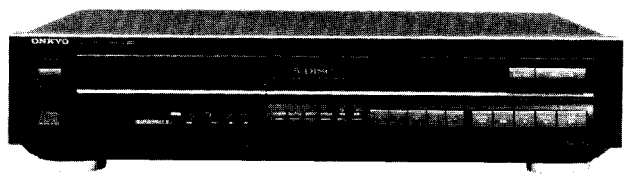
ONKYO SERVICE MANUAL

COMPACT DISC AUTOMATIC CHANGER

MODEL DX-C201



MODEL DX-C101



SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

SPECIFICATIONS

■ Audio

No. of channels:	2 (left and right, stereo)
Frequency response:	2–20,000 Hz±1 dB
Output voltage:	2V (at 0 dB)
Dynamic range:	96 dB
S/N ratio:	96 dB
Total harmonic distortion:	0.05% (1kHz, 0 dB)
Wow and flutter:	Below measurable limit
Output impedance:	1kΩ
Load impedance:	More than 10kΩ

■ Signal Format

Sampling frequency:	176.4kHz 4 times over sampling
D-A conversion:	1 bit PWM/Accu-Pulse D/A converter

■ Pickup

Wavelength:	780 nm

■ General

Power supply:	AC 60 Hz, 120V
Power consumption:	13W
Dimensions (W×H×D):	455×102.5×374mm (17 15/16″×4″×14 11/16″)
Weight:	6.6kg (15.2 lbs)

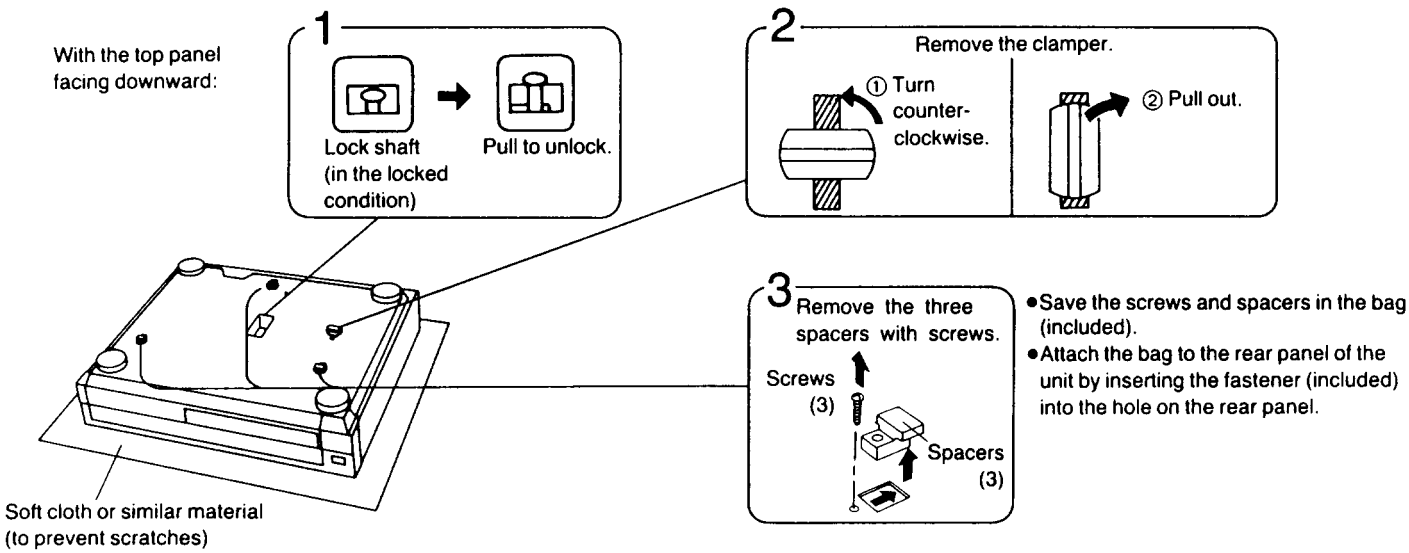
Specifications are subject to change without notice.

ONKYO
AUDIO COMPONENTS

BEFORE USE

To release the transport lock

The optical pickup is secured to prevent damage during transport.
Be sure to release it before use.

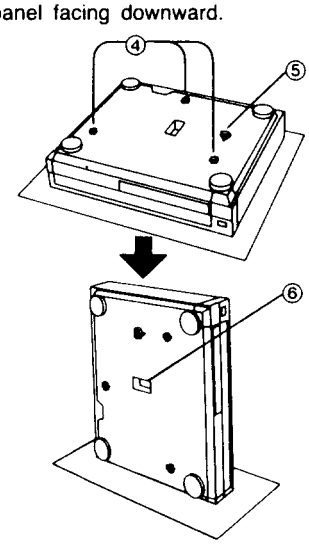


- Save the screws and spacers in the bag (included).
- Attach the bag to the rear panel of the unit by inserting the fastener (included) into the hole on the rear panel.

Before transporting the unit

Be sure to lock the optical pickup according to the procedures below:

① Turn the power on and remove all discs from the trays.
② Close the loading drawer and turn the power off.
③ Place the unit with the top panel facing downward.
④ Insert the three spacers into the slots and secure them with the three screws.
⑤ Insert the clamper into the slot and turn it clockwise.
⑥ Place the unit with the right panel facing downward, and press the lock shaft to the Lock position (🔒 → 🔓).



CAUTION:
- Do not transport the unit without locking the optical pickup. **SEVERE DAMAGE WILL RESULT.**
- Before tilting or transporting the unit, be sure to remove all discs from the trays.
  Otherwise discs may possibly be fallen into the unit and can not be taken out.

Placement notes

- **Place on a flat, level surface so that the front-rear inclination does not exceed 5°.**
- **Avoid places such as the following:**
- Near any equipment or device that generates strong magnetism.
- On any heat-generating equipment or device, or in any place where the temperature is high (40°C <104°F> or higher).
- Extremely cold places (5°C <41°F> or below).
- Near a tuner or TV (It may cause noise in the broadcast, or disturbance of the TV picture.)
- For long periods of time in direct sunlight.
- In dusty or smoky locations.
- In locations prone to vibrations.
- In locations where the rear panel is less than 10 cm (about 4") away from the wall or back of an audio rack.
- Within reach of children.
- **Do not place heavy objects, other than system components, on top of the unit.**
- **When carrying or storing the unit, handle it with care so it is not subjected to any strong bumps.**
  Always remove the disc before storing the unit for any period of time.
- **To avoid problems due to vibration.**
- Do not place a book or similar object under this unit.
- Do not route the connection cables (of this or other units) across the operation panel, across the top, or under the unit.
- **Do not push down on the loading drawer while it is opened. This may cause the unit to fall.**

PRECAUTION OF LASER DIODE

CAUTION: This unit utilizes a class 1 laser. Invisible laser radiation is emitted from the optical pick up lens when the unit is turned on:

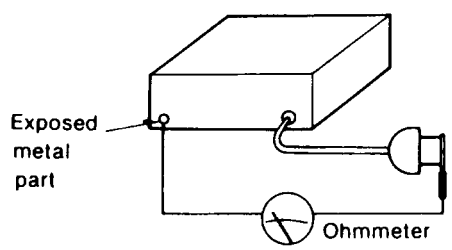
1. Do not look directly into the pick up lens.
2. Do not use optical instruments to look at the pick up lens.
3. Do not adjust the preset variable resistor on the optical pick up.
4. Do not disassemble the optical pick up unit.
5. If the optical pick up is replaced, use the manufactures specified replacement pick up only.
6. Use of control or adjustments or performance of procedures other than those specified herin may result in hazardous radiation exposure.

SAFETY PRECAUTION (This "safety precaution" is applied only in U.S.A.)

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

• INSULATION RESISTANCE TEST

1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part.



Resistance = Approx ∞

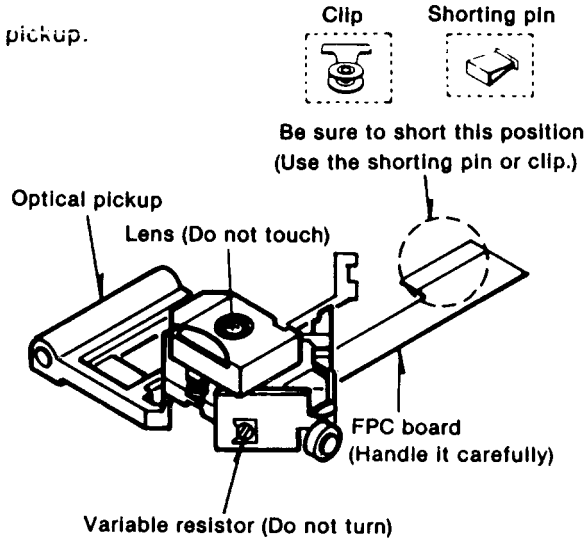
4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

HANDLING PRECAUTIONS FOR OPTICAL PICKUP

The laser diode in the optical pickup may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the optical pickup.

• Handling of optical pickup

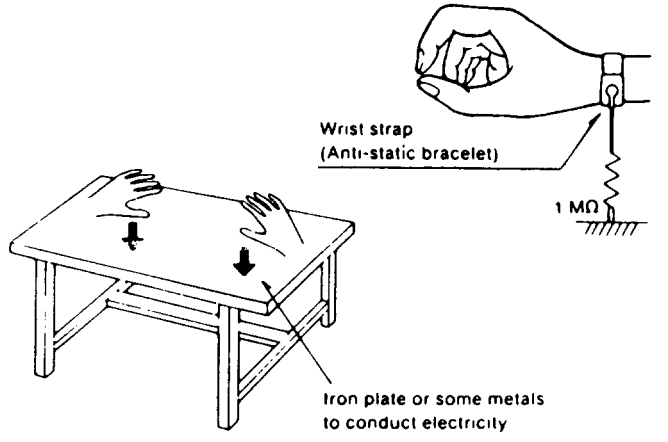
1. Do not subject the optical pickup to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board. (FPC board)
   When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board. (FPC board)
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.



• Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:
The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the optical pickup

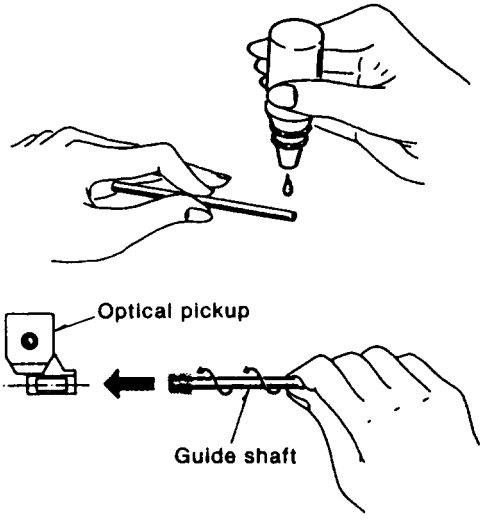


INSTRUCTIONS FOR TRAVERSE OIL

The container contains 6g (approx. 3ml) of oil.
One application (one shaft) uses 0.05ml of oil.

How to Use

(1) Remove the guide shaft in the traverse deck from the optical pickup and clean off any dust from the guide shaft.
(2) Apply one drop of the SZZOL31 to the tip of the guide shaft.
(3) Hold the guide shaft so that its oiled end touches the optical pickup and insert it into the bearing while rotating it slowly.
(4) After securing the guide shaft, move the optical pickup by hand several times to the left and right to distribute the oil on the guide shaft.



"ATTENTION SERVICER"
Some chassis components may have sharp edges. Be careful when disassembling and servicing.

DISASSEMBLY INSTRUCTIONS

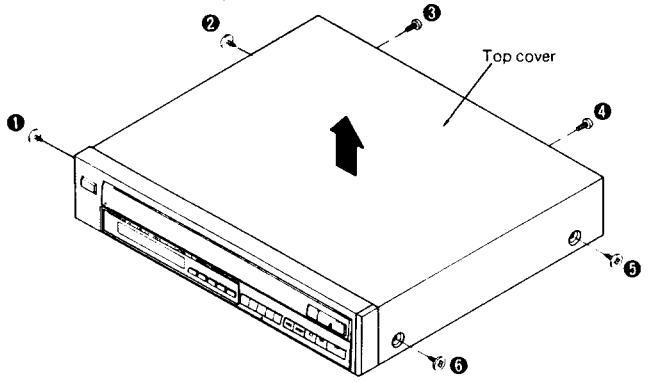
Warning: This product uses a laser diodes. Refer to caution statements on page 4.

ACHTUNG:
- Die lasereinheit nicht zerlegen.
- Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

Ref. No. 1 — Removal of the top cover

Procedure 1

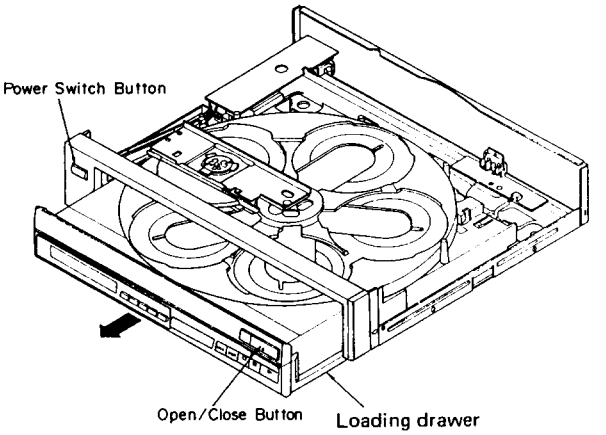
1. Remove the 6 screws (❶ ~ ❻).
2. Remove the top cover in the direction of the arrow.



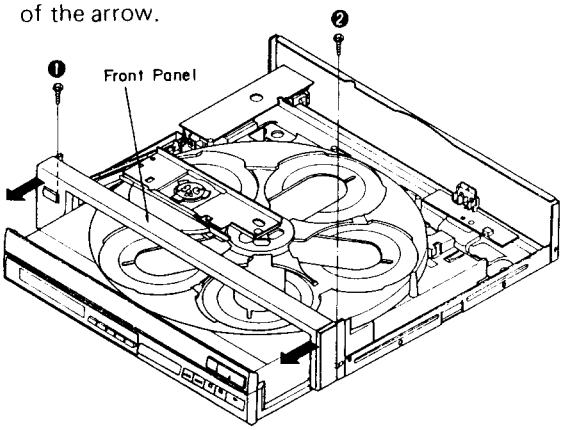
Ref. No. 2 — Removal of the front panel

Procedure 1 →2

1. Switch the player power ON.
2. Push the open/close button and pull out the loading drawer.
3. Switch the player power OFF.



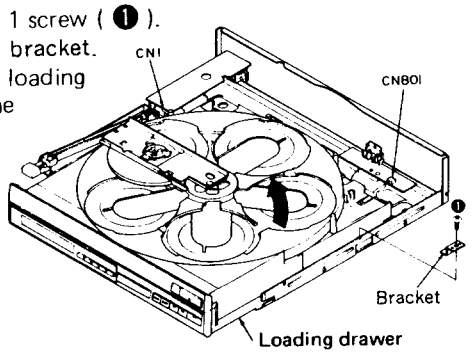
4. Remove the 2 screws (❶ , ❷).
5. Remove the front panel in the direction of the arrow.



Ref. No. 3 — Removal of the loading drawer

Procedure 1 →2 →3

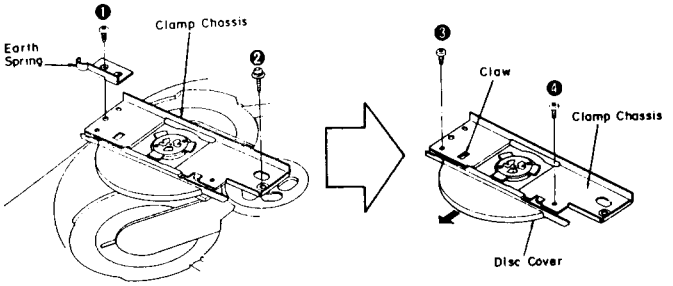
1. Switch the player power ON.
2. Push the open/close button and switch the player power OFF when pull out the loading drawer in the center of chassis as shown below.
3. Remove the 2 connectors (CN1, CN801).
4. Remove the 1 screw (❶).
5. Remove the bracket.
6. Remove the loading drawer in the direction of the arrow.



Ref. No. 4 — Removal of the clamp chassis and disc cover

Procedure 1 →4

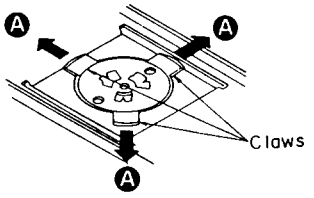
1. Remove the 2 screws (❶ , ❷).
2. Remove the earth spring.
3. Remove the clamp chassis.
4. Remove the 2 screws (❸ , ❹).
5. Release the claw and pull out the disc cover.

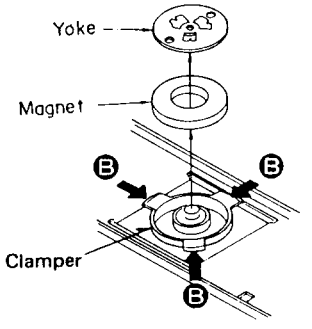


Ref. No. 5 — Removal of the yoke, magnet and clamp

Procedure 1 →4 →5

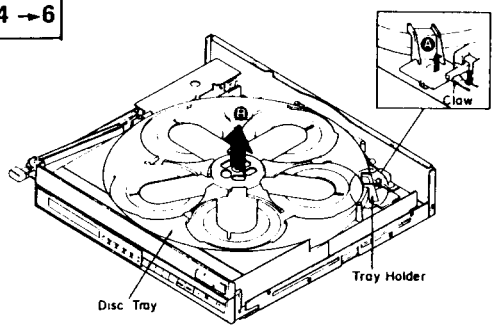
1. Push the claws of clamper in the direction of the arrow Ⓐ and remove the yoke and magnet.
2. Push the claws of clamper in the direction of the arrow Ⓑ and remove the clamper.





Ref. No. 6	Removal of the disc tray

Procedure 1→2→4→6

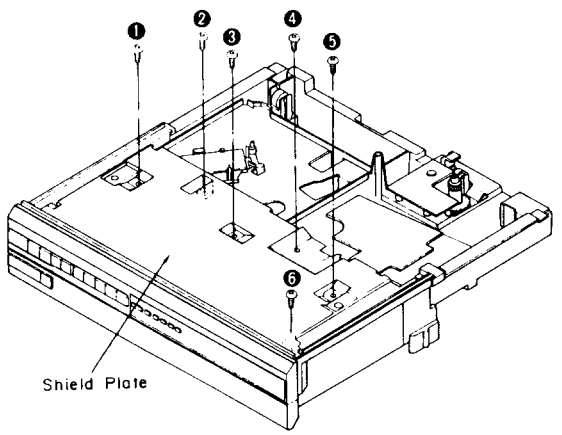


1. Release the claw and remove the tray holder in the direction of the arrow Ⓐ.
2. Remove the tray holder in the direction of the arrow Ⓑ.

Ref. No. 8	Removal of the shild plate

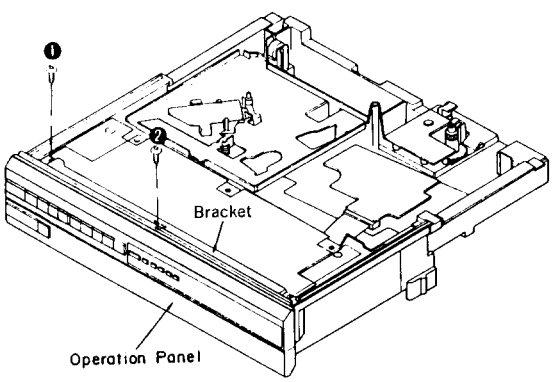
Procedure 1→2→3→8

- Remove the 6 screws (❶ ~ ❻).



Ref. No. 9	Removal of the operation panel

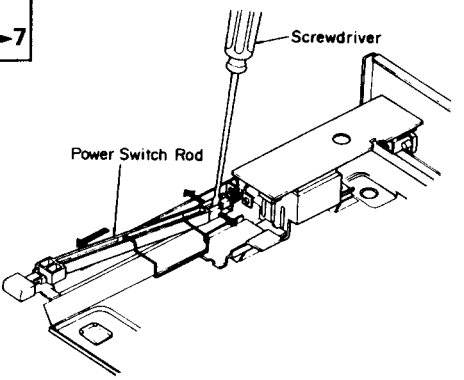
Procedure 1→2→3→8→9



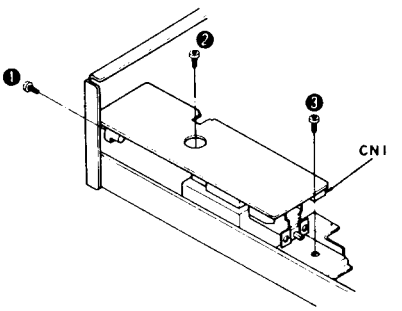
1. Remove the 2 screws. (❶ ~ ❷).

Ref. No. 7	Removal of the power source P.C.B., power transformer and power switch rod

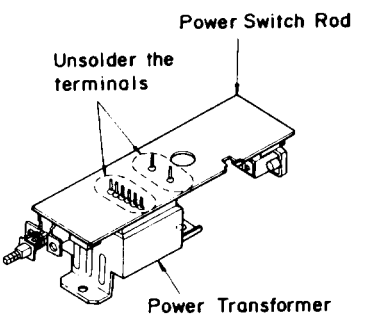
Procedure 1→2→3→7



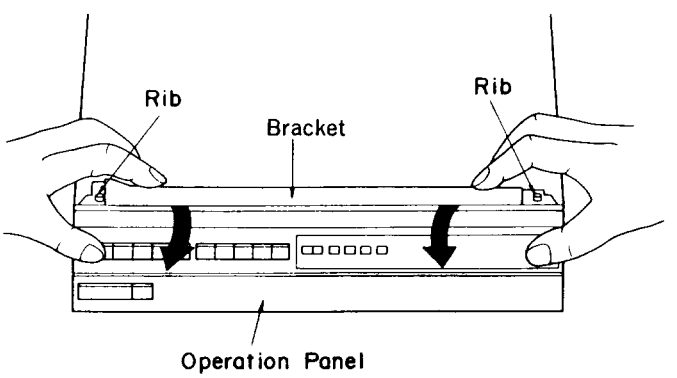
1. Remove the power switch rod by using a screwdriver.



2. Remove the 3 screws (❶ ~ ❸).
3. Remove the 1 connector (CN 1).



4. Unsolder the terminals of the power transformer.

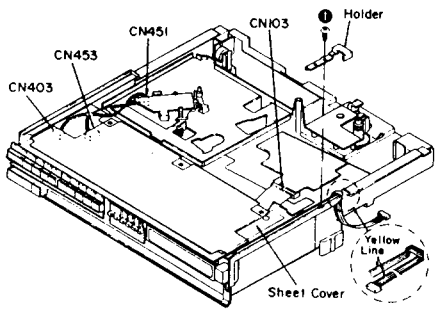


2. Remove the bracket from the rib.
3. Remove the operation panel in the direction of the arrow.

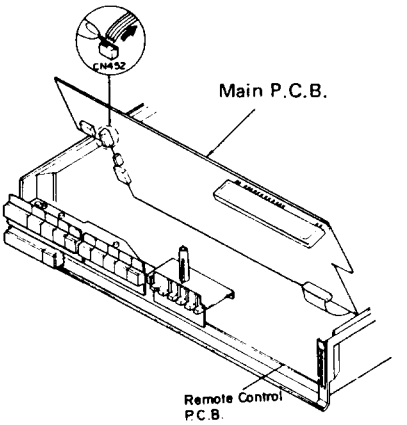
Ref. No. 10 — **Removal of the main P.C.B.**

Procedure 9 → 10

1. Remove the 1 screw (❶).
2. Remove the holder.
3. Remove the sheet cover.



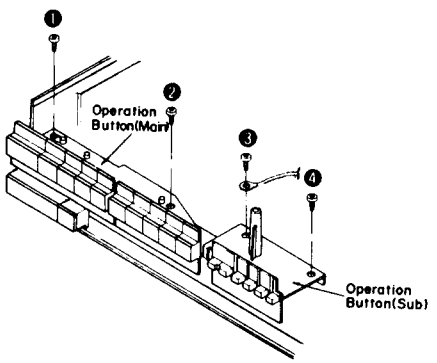
4. Remove the 3 connectors (CN403, CN451, CN453).
5. Remove the 2 flat cables (CN103, CN452).
6. Remove the main P.C.B. in the direction of the arrow.



Ref. No. 11 — **Removal of the operation button (main) and operation button (sub)**

Procedure 9 → 10 → 11

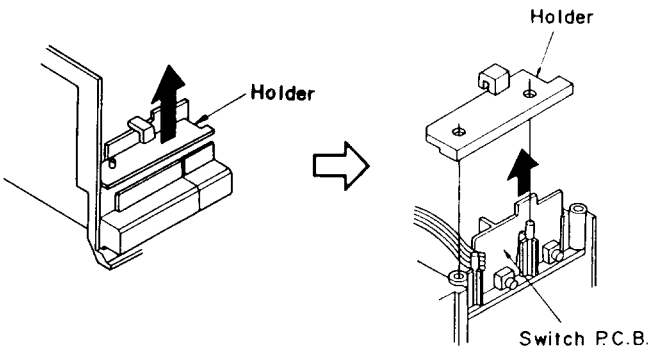
- Remove the 4 screws (❶ ~ ❹).



Ref. No. 12 — **Removal of the switch P.C.B.**

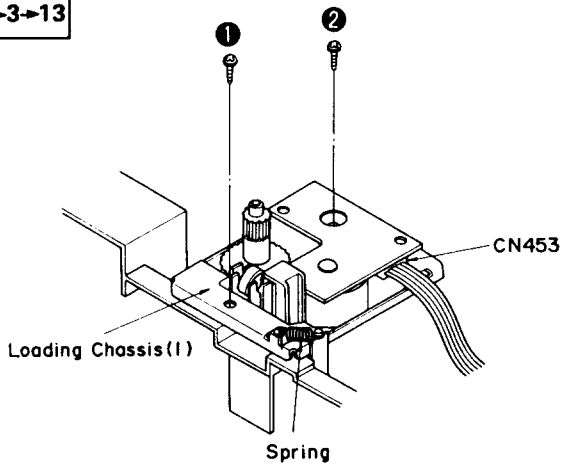
Procedure 9 → 10 → 11 → 12

1. Remove the holder.
2. Pull out the switch P.C.B. in the direction of the arrow.



Ref. No. 13 — **Removal of the loading chassis (1)**

Procedure 1 → 2 → 3 → 13

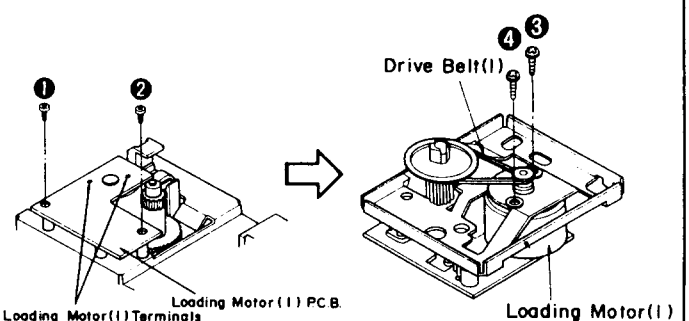


1. Remove the spring.
2. Remove the 1 connector (CN453).
3. Remove the 2 screws (❶ , ❷).

Ref. No. 14 — **Removal of the loading motor (1) P.C.B. and loading motor (1)**

Procedure 13 → 14

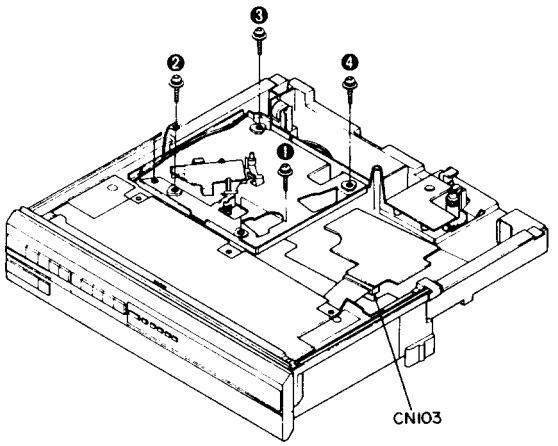
1. Remove the 2 screws (❶ , ❷).
2. Unsolder the 2 terminals of loading motor (1).
3. Remove the drive belt (1).
4. Remove the 2 screws (❸ , ❹).



Ref. No. 15	Removal of the loading chassis (2)

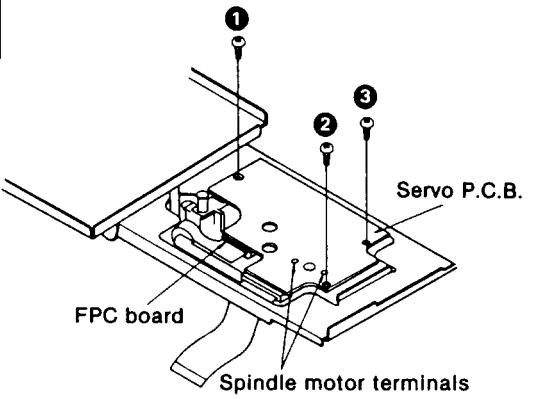
Procedure 4→8→15

1. Remove the 4 screws (❶ ~ ❹).
2. Remove the 1 flat cable (CN103).
3. Remove the 1 connector (CN451).



Ref. No. 16	Removal of the servo P.C.B.

Procedure 15 →16



1. Remove the 3 screws (❶~❸).
2. Unsolder the 2 terminals of spindle motor.
3. Remove the FPC board from the optical pickup.

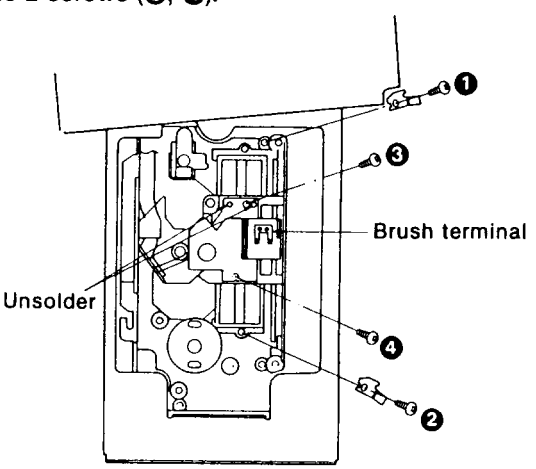
Caution: To prevent the breakdown of the laser diode, antistatic shorting pin is inserted into the FPC board.

Ref. No. 17	Removal of the optical pickup

Procedure 15→16→17

Refer to the handling precautions for optical pickup and instructions for traverse oil (See page 5).

1. Remove the 2 screws (❶, ❷).
2. Unsolder the 2 terminals and remove the 2 screws (❸, ❹).

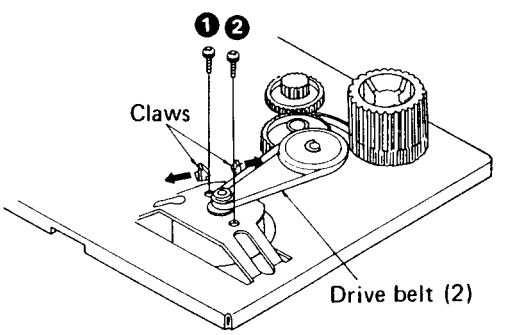


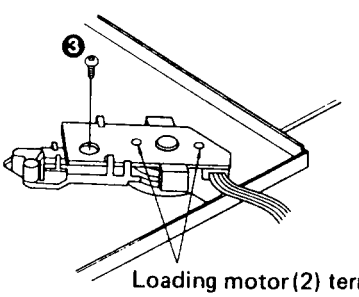
Caution: Take care not to touch the brush terminal.

Ref. No. 18	Removal of the loading motor (2)

Procedure 15 →18

1. Remove the drive belt (2).
2. Remove the 3 screws (❶~❸).
3. Release the 2 claws.
4. Unsolder the 2 terminals of the loading motor (2).



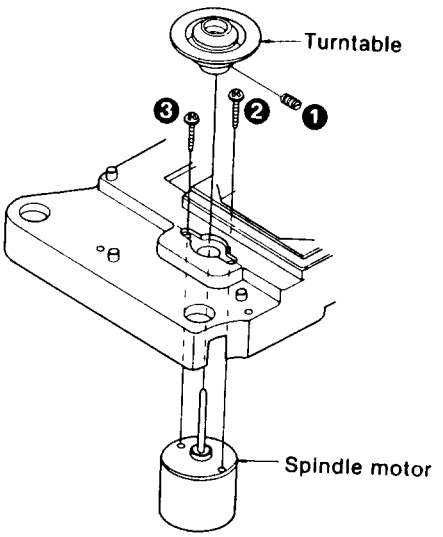


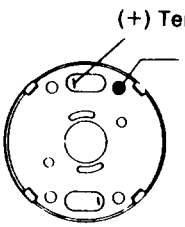
Ref. No. 19	Removal of the spindle motor
Procedure 15→16→19	

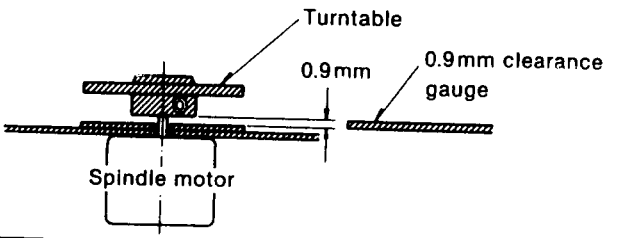
1. Loosen the screw (❶) by using a 1.27mm allen wrench and remove the turntable.
2. Remove the 2 screws (❷, ❸).

Caution:
1. Turntable height adjustment is necessary any time the turntable or spindle motor is replaced.
2. The (+) terminal of the spindle motor is indicated by the red mark.

Adjustment of turntable height
1. Insert a 0.9mm clearance gauge between the turntable and loading base as shown in the figure.
2. Tighten the turntable set-screw by using a 1.27mm allen wrench.

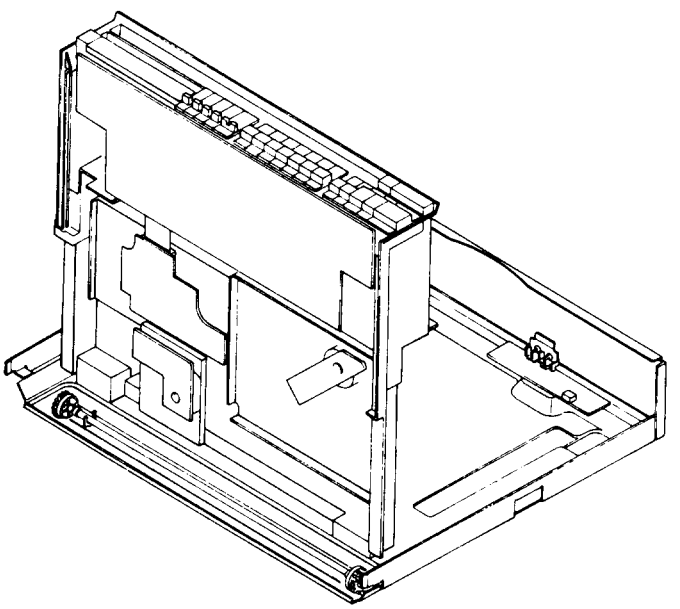






Ref. No. 20	How to check the main P.C.B.
Procedure 1→2→3→4→5 →6→8→9	

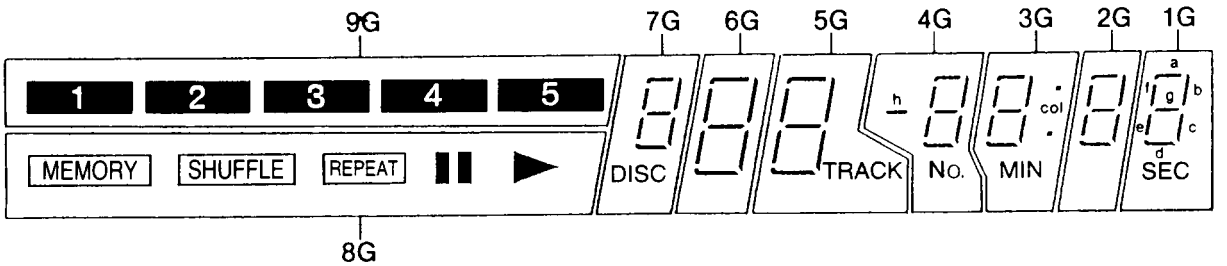
- When checking the foil side of the main P.C.B. and replacing the parts, do as shown here.



Pin No.	Symbol	Description
21	AVDD1	Power supply terminal 1 for analog system. (+5V)
22	OUTL2(-)	PWM output terminal for L 2 ch negative phase.
23	OUTL2(+)	PWM output terminal for L 2 ch positive phase.
24	OUTL1(-)	PWM output terminal for L 1 ch negative phase.
25	OUTL1(+)	PWM output terminal for L 1 ch positive phase.
26	AVSS1	Ground terminal 1 for analog system.
27	NC	
28	AVSS2	Ground terminal 2 for analog system.
29	OUTR1(+)	PWM output terminal for R 1 ch positive phase.
30	OUTR1(-)	PWM output terminal for R 1 ch negative phase.
31	OUTR2(+)	PWM output terminal for R 2 ch positive phase.
32	OUTR2(-)	PWM output terminal for R 2 ch negative phase.
33	AVDD2	Power supply terminal 2 for analog system. (+5V)
34	DVDD1	Power supply terminal 1 for digital system. (+5V) (Power supply for oscillation circuit)
35	DVSS1	Ground terminal 1 for digital system. (Ground for oscillation circuit)
36	X2	Crystal oscillation terminal.
37	X1	Crystal oscillation terminal.(External clock input terminal)
38	DVSS2	Ground terminal 2 for digital system.
39	NSUB	Connect to D-VDD.(Potential fixing terminal for Silicon circuit board)
40	DVDD2	Power supply terminal 2 for digital system. (+5V)
41	NC	
42	ZFLGB	Output terminal for zero output detector.

INTERNAL CONNECTION OF FL

• Grid connection diagram



• Anode connection table

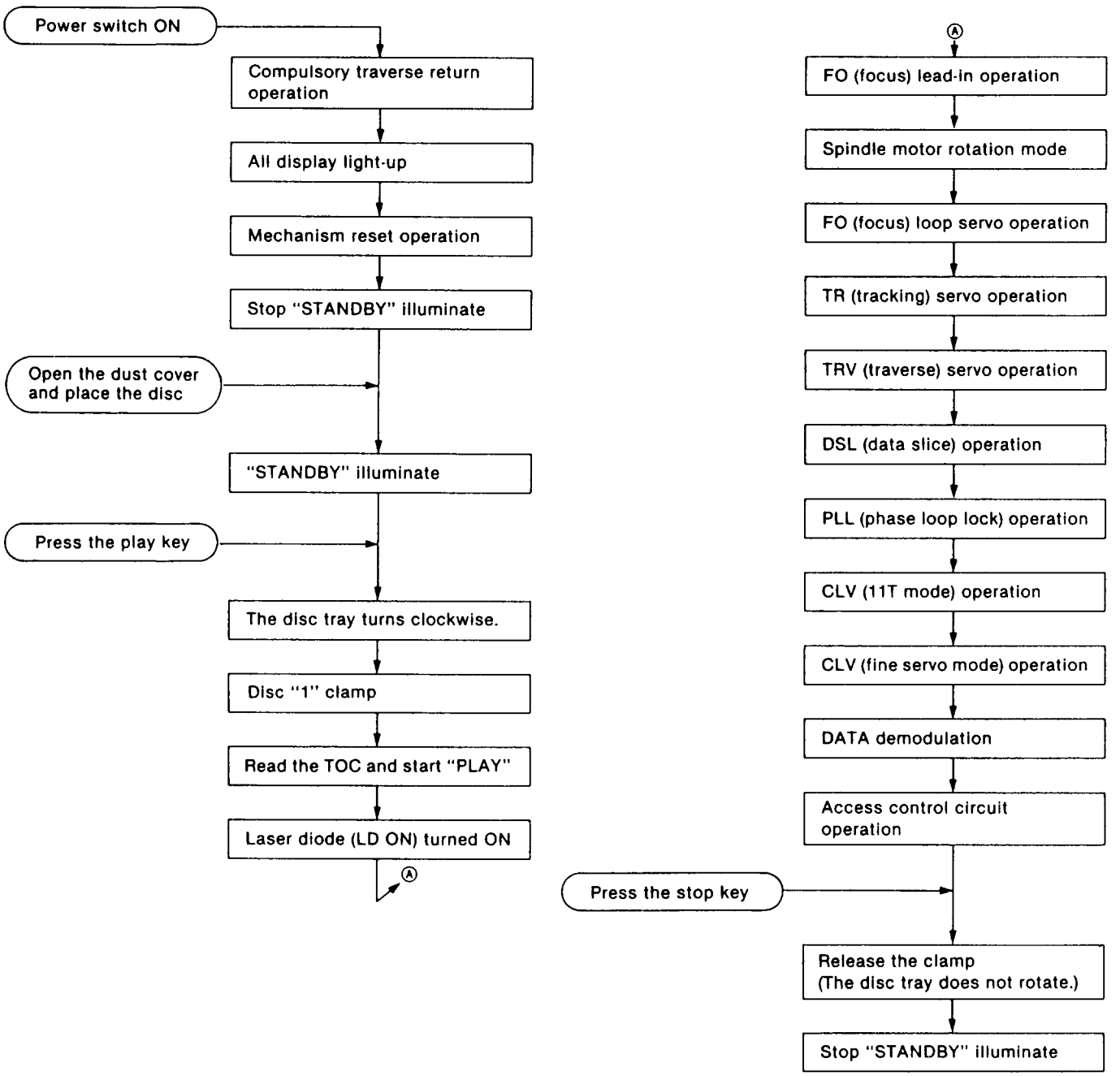
	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	–	–	a	a	a	a	a	a	a
b	5	MEMORY	b	b	b	b	b	b	b
c	4	SHUFFLE	c	c	c	c	c	c	c
d	3	–	d	d	d	d	d	d	d
e	2	–	e	e	e	e	e	e	e
f	1	▶	f	f	f	f	f	f	f
g	–	REPEAT	g	g	g	g	g	g	g
h	–	❚❚	DISC	–	TRACK	—	MIN , col	–	SEC
i	–	–	–	–	–	No.	–	–	–

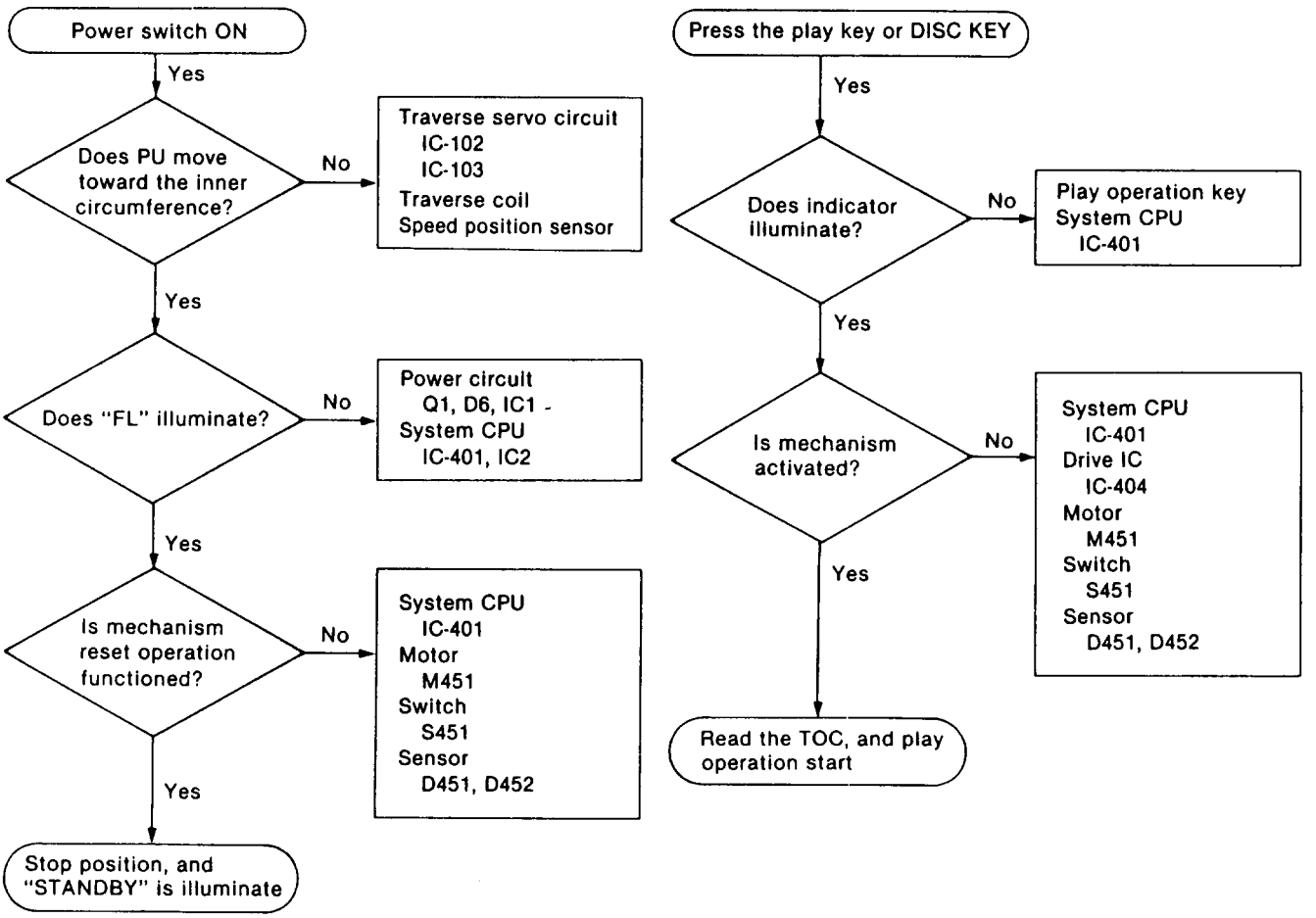
• Pin connection

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
CONNECTION	F1	F1	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	8G	7G	6G	5G	4G	3G	2G
PIN NO.	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42												
CONNECTION	1G	9G	i	h	g	f	e	d	c	b	a	NP	NP	F2	F2												

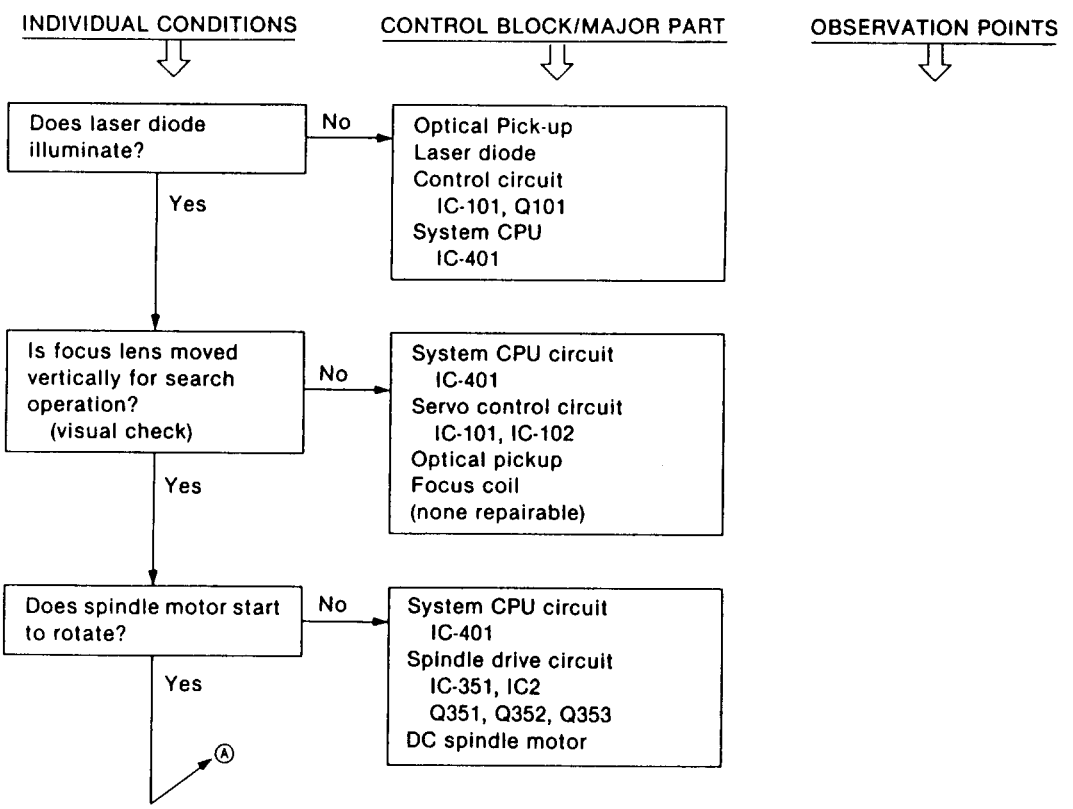
TROUBLESHOOTING GUIDE

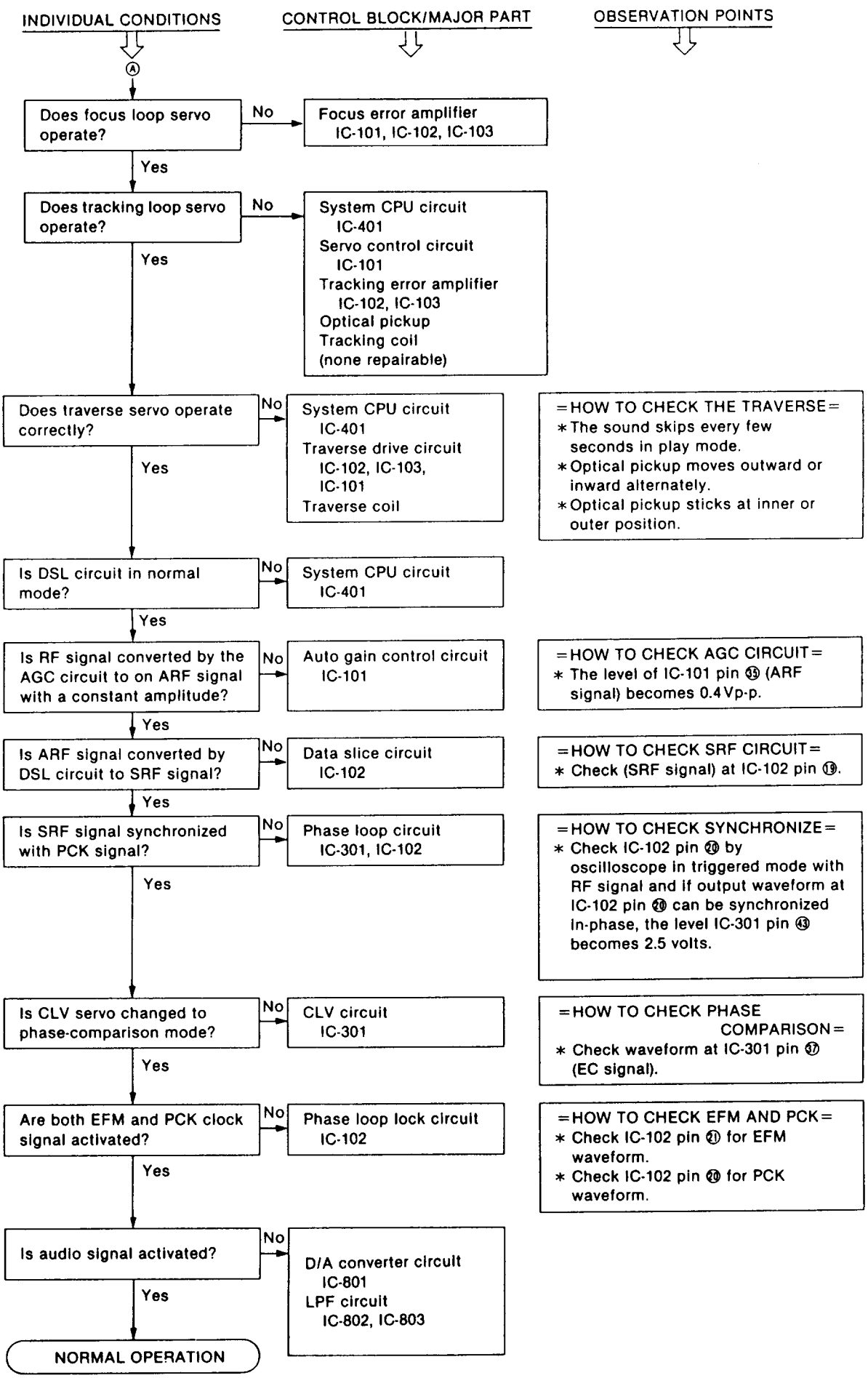
PLAYBACK FLOW CHART


Power switch ON
Compulsory traverse return operation
All display light-up
Mechanism reset operation
Stop "STANDBY" illuminate
Open the dust cover and place the disc
"STANDBY" illuminate
Press the play key
The disc tray turns clockwise.
Disc "1" clamp
Read the TOC and start "PLAY"
Laser diode (LD ON) turned ON
Ⓐ
Ⓐ
FO (focus) lead-in operation
Spindle motor rotation mode
FO (focus) loop servo operation
TR (tracking) servo operation
TRV (traverse) servo operation
DSL (data slice) operation
PLL (phase loop lock) operation
CLV (11T mode) operation
CLV (fine servo mode) operation
DATA demodulation
Access control circuit operation
Press the stop key
Release the clamp (The disc tray does not rotate.)
Stop "STANDBY" illuminate

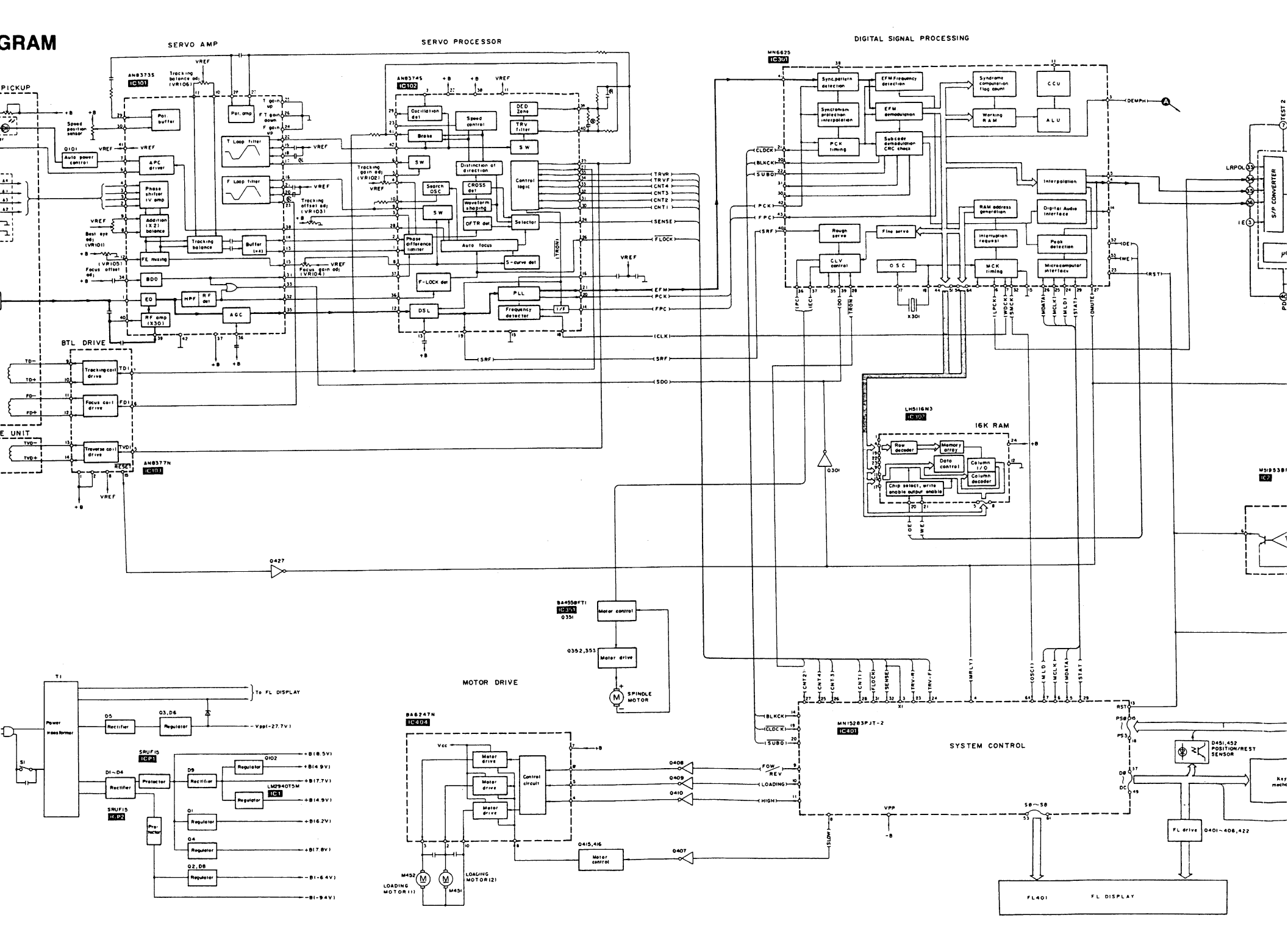


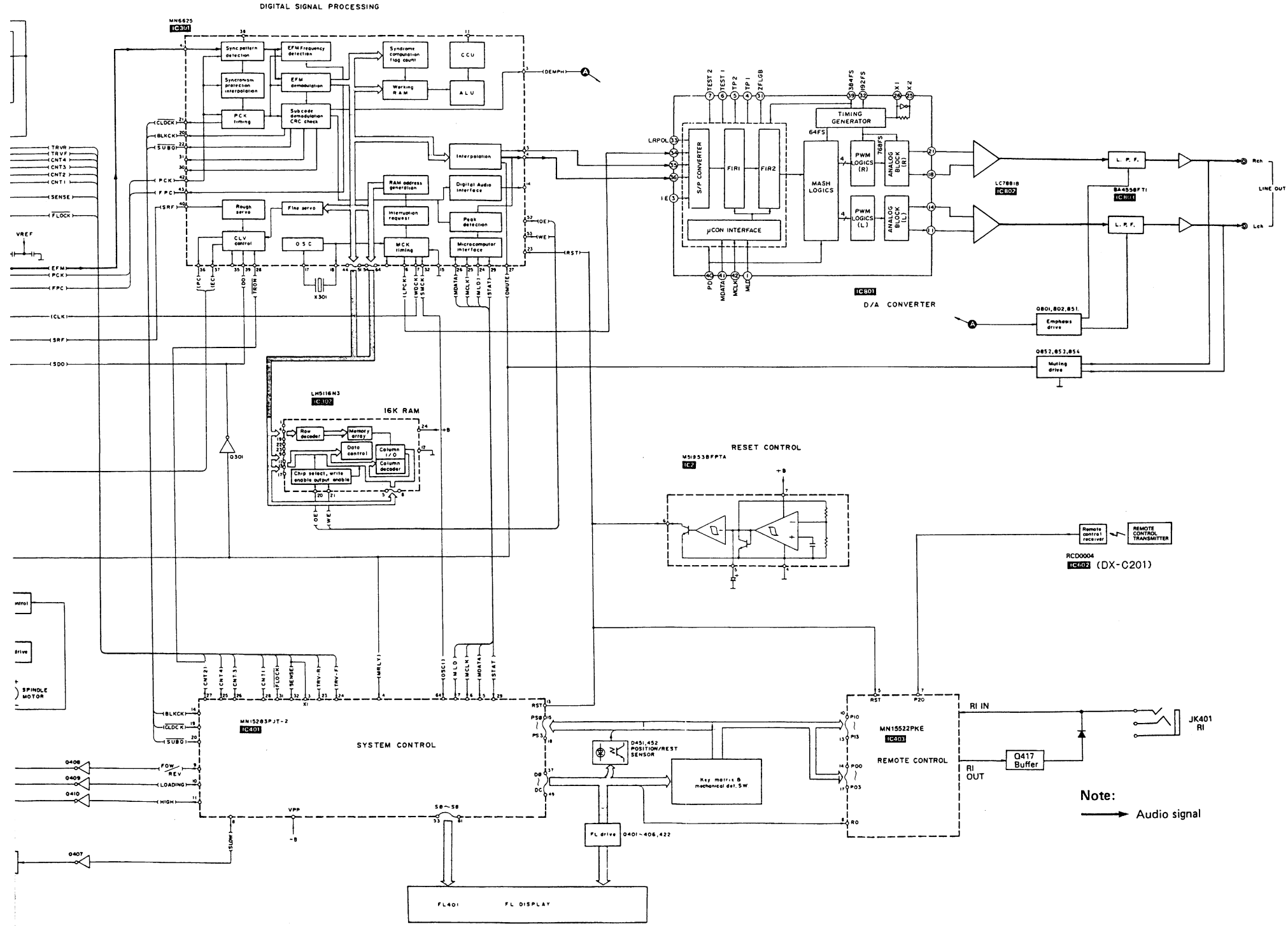
TOC READ OPERATION · PLAY OPERATION




INDIVIDUAL CONDITIONS
CONTROL BLOCK/MAJOR PART
OBSERVATION POINTS
Ⓐ
Does focus loop servo operate?
No
Focus error amplifier
IC-101, IC-102, IC-103
Yes
Does tracking loop servo operate?
No
System CPU circuit
IC-401
Servo control circuit
IC-101
Tracking error amplifier
IC-102, IC-103
Optical pickup
Tracking coil
(none repairable)
Yes
Does traverse servo operate correctly?
No
System CPU circuit
IC-401
Traverse drive circuit
IC-102, IC-103,
IC-101
Traverse coil
=HOW TO CHECK THE TRAVERSE=
*The sound skips every few seconds in play mode.
*Optical pickup moves outward or inward alternately.
*Optical pickup sticks at inner or outer position.
Yes
Is DSL circuit in normal mode?
No
System CPU circuit
IC-401
Yes
Is RF signal converted by the AGC circuit to on ARF signal with a constant amplitude?
No
Auto gain control circuit
IC-101
=HOW TO CHECK AGC CIRCUIT=
* The level of IC-101 pin ㉝ (ARF signal) becomes 0.4Vp-p.
Yes
Is ARF signal converted by DSL circuit to SRF signal?
No
Data slice circuit
IC-102
=HOW TO CHECK SRF CIRCUIT=
* Check (SRF signal) at IC-102 pin ⑲.
Yes
Is SRF signal synchronized with PCK signal?
No
Phase loop circuit
IC-301, IC-102
=HOW TO CHECK SYNCHRONIZE=
* Check IC-102 pin ⑳ by oscilloscope in triggered mode with RF signal and if output waveform at IC-102 pin ⑳ can be synchronized in-phase, the level IC-301 pin ㊸ becomes 2.5 volts.
Yes
Is CLV servo changed to phase-comparison mode?
No
CLV circuit
IC-301
=HOW TO CHECK PHASE COMPARISON=
* Check waveform at IC-301 pin ㊲ (EC signal).
Yes
Are both EFM and PCK clock signal activated?
No
Phase loop lock circuit
IC-102
=HOW TO CHECK EFM AND PCK=
* Check IC-102 pin ㉑ for EFM waveform.
* Check IC-102 pin ⑳ for PCK waveform.
Yes
Is audio signal activated?
No
D/A converter circuit
IC-801
LPF circuit
IC-802, IC-803
Yes
NORMAL OPERATION

GRAM


SERVO AMP
SERVO PROCESSOR
DIGITAL SIGNAL PROCESSING
PICKUP
AN8373S
IC101
AN8374S
IC102
MN6625
IC301
BTL DRIVE
AN8377N
IC103
LH5116N3
IC107
16K RAM
BA4558FT
IC341
MOTOR DRIVE
BA6247N
IC404
MN15283PJT-2
IC401
SYSTEM CONTROL
SRUF15
IC P1
SRUF15
IC P2
LM2940T5M
IC T1
To FL DISPLAY
SPINDLE MOTOR
LOADING MOTOR(1)
LOADING MOTOR(2)
M452
M451
FL401
FL DISPLAY
S/P CONVERTER
POSITION/REST SENSOR
FL drive
Power transformer
Rectifier
Regulator
Protector
Servo control
Motor drive
Control circuit
Motor control
Sync.pattern detection
EFM demodulation
Subcode demodulation CRC check
Interpolation
Digital Audio interface
Peak detection
Microcomputer interface
Rough servo
Fine servo
CLV control
OSC
MCK timing
RAM address generation
Interruption request
Working RAM
ALU
CCU
Memory array
Data control
Column I/O
Column decoder
Row decoder
Chip select, write enable output enable


DIGITAL SIGNAL PROCESSING
MN6625
IC301
Sync pattern detection
EFM Frequency detection
Syndrome computation flag count
CCU
Syncronism protection interpolation
EFM demodulation
Working RAM
ALU
PCK timing
Subcode demodulation CRC check
Interpolation
RAM address generation
Digital Audio interface
Rough servo
Fine servo
Interruption request
Peak detection
CLV control
OSC
MCK timing
Microcomputer interface
X301
TRVR
TRVF
CNT4
CNT3
CNT2
CNT1
SENSE
FLOCK
VREF
EFM
PCK
FPC
CLK
SRF
SDO
TEST 2
TEST 1
TP2
TP1
ZFLGB
384FS
192FS
X1
X2
TIMING GENERATOR
64FS
LRPOL
IE
S/P CONVERTER
FIR1
FIR2
MASH LOGICS
PWM LOGICS (R)
PWM LOGICS (L)
768FS
ANALOG BLOCK (R)
ANALOG BLOCK (L)
μCON INTERFACE
PCO
MDATA1
MCLK1
MLD1
IC801
D/A CONVERTER
LC78818
IC802
BA4558FTI
IC804
L. P. F.
L. P. F.
Rch
Lch
LINE OUT
Q801, 802, 851
Emphasis drive
Q852, 853, 854
Muting drive
LH5116N3
IC302
16K RAM
Row decoder
Memory array
Data control
Column I/O
Column decoder
Chip select, write enable output enable
Q301
RESET CONTROL
M51953BFPTA
IC2
Remote control receiver
REMOTE CONTROL TRANSMITTER
RCD0004
IC602 (DX-C201)
MN15283PJT-2
IC401
SYSTEM CONTROL
SPINDLE MOTOR
Q406
Q409
Q410
Q407
FOW
REV
LOADING
HIGH
SLOW
VPP
-B
S8~S6
Q451, 452 POSITION/REST SENSOR
Key matrix & mechanical det. SW
FL drive
Q401~406, 422
FL401
FL DISPLAY
MN15522PKE
IC403
REMOTE CONTROL
RI IN
RI OUT
Q417 Buffer
JK401 RI
Note:
Audio signal

PRINTED CIRCUIT BOARD–PARTS LIST

MAIN PC BOARD – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
IC1	22240346	LM2940T5M
IC2	22240347	M51953BFP
IC301	22240348	MN6625
IC302	22240471	LH5116N3
IC351,IC803	22240350	BA4558F
IC401	22240351	MN15283PJT-2
IC403	22240352	MN15522PKE
IC404	22240353	BA6247N
IC801	22240389	MN6474
IC802	22240472	LM833M63
	IC protectors	
ICP1,ICP2	252122	⚠ SRUF15
	Transistors	
Q1,Q352	2213783 or	2SD1862-Q or
	2213784	2SD1862-R
Q2,Q353	2213793 or	2SB1240-Q or
	2231794	2SB1240-R
Q3	2213803,	2SB1238-Q,
	2213804 or	2SB1238-R or
	2213805	2SB1238-S
Q301,Q853	226037 or	UN4212 or
Q401-Q406	2213160	DTC124ES
Q351	226036 or	UN4112 or
Q407-Q410	2212600	DTA124ES
Q411-Q413	2201903	2SA1309-Q
Q415,Q416	226037 or	UN4212 or
Q422	2213160	DTC124ES
Q417,Q419	2201903	2SA1309-Q
Q420,Q423	2201903	2SA1309-Q
Q427	226036 or	UN4112 or
Q851,Q852	2212600	DTA124ES
Q801,Q802	2201893	2SC3311-Q
Q803,Q804	2213814,	2SD1450-R,
	2213815 or	2SD1450-S or
	2213816	2SD1450-T
Q854	2213510	DTA114ES
	FL tube	
FL401	212085	RSL0047-F
	Diodes	
D1-D5	223192	⚠ 1SR35200TB
D6	224452702	MTZ27B
D7,D8	224450682	MTZ6.8B
D9	223192	⚠ 1SR35200TB
D10	224450622	MTZ6.2B
D12	223193	MA723
D351,D352	224450512	MTZ5.1B
D401-D408	223163	1SS133
D410-D416	223163	1SS133
D417	224450302	MTZ3.0B
D418	224450332	MTZ3.3B
D419-D425	223163	1SS133
D801-D803	223163	1SS133
D851-D854	223163	1SS133
	Coils	
L401,L403	231177	RLQZP3P3K
L451	231177	RLQZP3P3K
L454-L457	231177	RLQZP3P3K
L460,L461	231177	RLQZP3P3K
	X'tal	
X301	3010173	33.8688MHz
	Ferrite beads	
Z301,Z303	230909	EXCELDR35V
Z803	230909	EXCELDR35V
	Capacitors	
C4	354743329	3300 μ F,16V,Elect.
C5	354742229	2200 μ F,16V,Elect.
C6	354774709	47 μ F,63V,Elect.
C10,C11	354734719	470 μ F,10V,Elect.
C12,C13	354731019	100 μ F,10V,Elect.
C15	354722219	220 μ F,6.3V,Elect.
C19	354781099	0.1 μ F,50V,Elect.
C301,C306	354721019	100 μ F,6.3V,Elect.
C305	354723319	330 μ F,6.3V,Elect.
C402	354724709	47 μ F,6.3V,Elect.
C407	354721019	100 μ F,6.3V,Elect.
C809,C810	374723334	0.033 μ F±5%,50V,Plastic
C811,C812	371121024	1000pF±5%,50V,Mylar
C815,C816	354784709	47 μ F,50V,Elect.
C823,C824	354723319	330 μ F,6.3V,Elect.
C827,C828	354734709	47 μ F,10V,Elect.
C851	354741009	10 μ F,16V,Elect.
C852	354721029	1000 μ F,6.3V,Elect.
	Filters	
Z451-Z453	3030003	DSS30654E222
Z801,Z802	3030005	DSS36431B102
	Resistor	
R424	441620394	3.9Ω,1W,Metal oxide film
	Switches	
SW41	25035621	RMN0010
SW42	25035622	RMN0011
	Plugs	
CN301	25055597	SJSD2221
CN403,CN452	25055598	RJS4T4ZA
CN453	25055599	RJP5G182ZA
	Sockets	
BT1	2009990086	REX0076-2
BT801	2009990178	REX0160-2
	Bracket	
	27141402	RMN0014-1

SWITCH PC BOARD – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
S418,S419	25035623	EVQQTG05R,Switches

REMOTE SENSOR PC BOARD – PARTS LIST

(Only model DX-C201)

CIRCUIT NO.	PART NO.	DESCRIPTION
IC602	24130005	RCD0004,Remote control sensor

LINE OUT PC BOARD – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
D427	224450562	MTZ5.6B,Diode
RK401	25045294	RJJ33T01,Jack
JK801	25045295	RJH3201N,Jack
CN801	25055486	SJTD414W,Plug

LOADING MOTOR (1) PC BOARD – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
S453,S454	25065392	SSPD12,Microswitch
CN453	25055488	SJTD514W,Plug

LOADING MOTOR (2) PC BOARD – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
S451	25065392	SSPD12,Microswitch
CN451	25055489	RJS4T7ZA,Plug

SENSOR PC BOARD – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
D451,D452	24120029	SVDGP1S53,Interruptors

POWER SUPPLY PC BOARD – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
C1001	3500065A	⚠ DE7150FZ103PAC400/125V, Capacitor IS
JK1	25050412	⚠ SJS9237,AC inlet
CN1	25055487	SJTD614,Plug
S1	25035624	⚠ ESB8249V,Push switch

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PARTS NUMBER SPECIFIED.

SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with development of new technology.)

Notes:

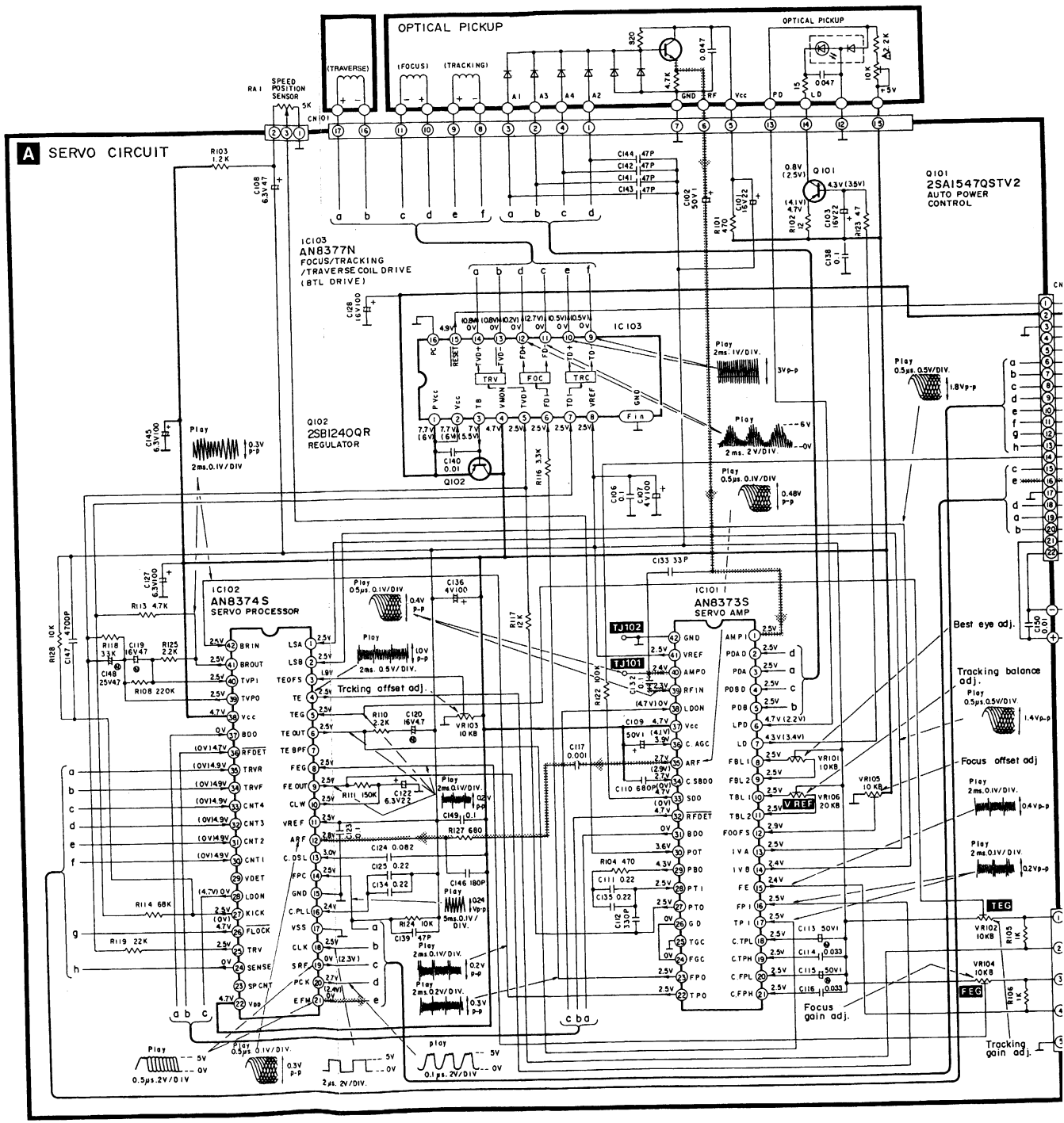
- **S1** : Power switch in "**on**" position.
- **S401~405** : Disc select (disc, 1~5) switches.
  [S401: 1, S402: 2, S403: 3, S404: 4, S405: 5]
- **S406** : Time mode select (time mode) switch.
- **S407, 408** : Skip (I◀◀ skip ▶▶I) switches.
  S407: I◀◀, S408: ▶▶I
- **S409, 410** : Search (◀◀ search ▶▶) switches.
  S409: ◀◀, S410: ▶▶
- **S411** : Program/continue (program/continue) switch.
- **S412** : Repeat (repeat) switch.
- **S413** : Pause (▮▮ pause) switch.
- **S414** : Play (▶ play) switch.
- **S415** : Shuffle (random) switch.
- **S416** : Stop (■ stop) switch.
- **S418** : Disc skip (disc skip) switch.
- **S419** : Open/close switch (Disc).
- **S451** : Clamp switch.
- **S453** : Open switch (Loading).
- **S454** : Close switch (Loading).

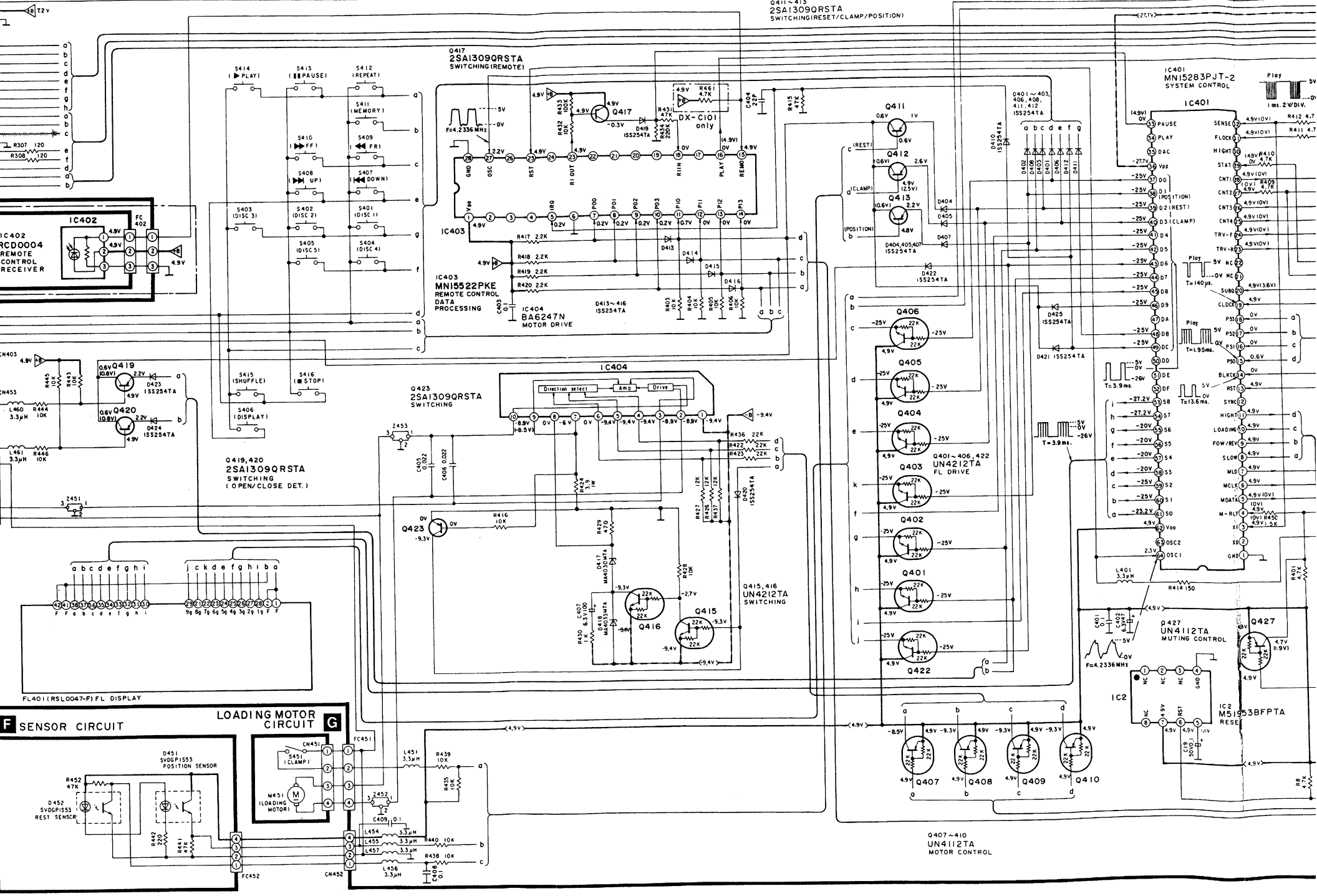
- The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis.
  Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.
  * The parenthesized are the values of voltage generated during playing (Test disc 1kHz, L+R, 0dB), others are voltage values in stop mode.
- Important safety notice:
  Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- ─≺ ≻─/─≺ ≻─ : Positive voltage lines and negative voltage lines.
  ⋯⋯ : audio signal lines.

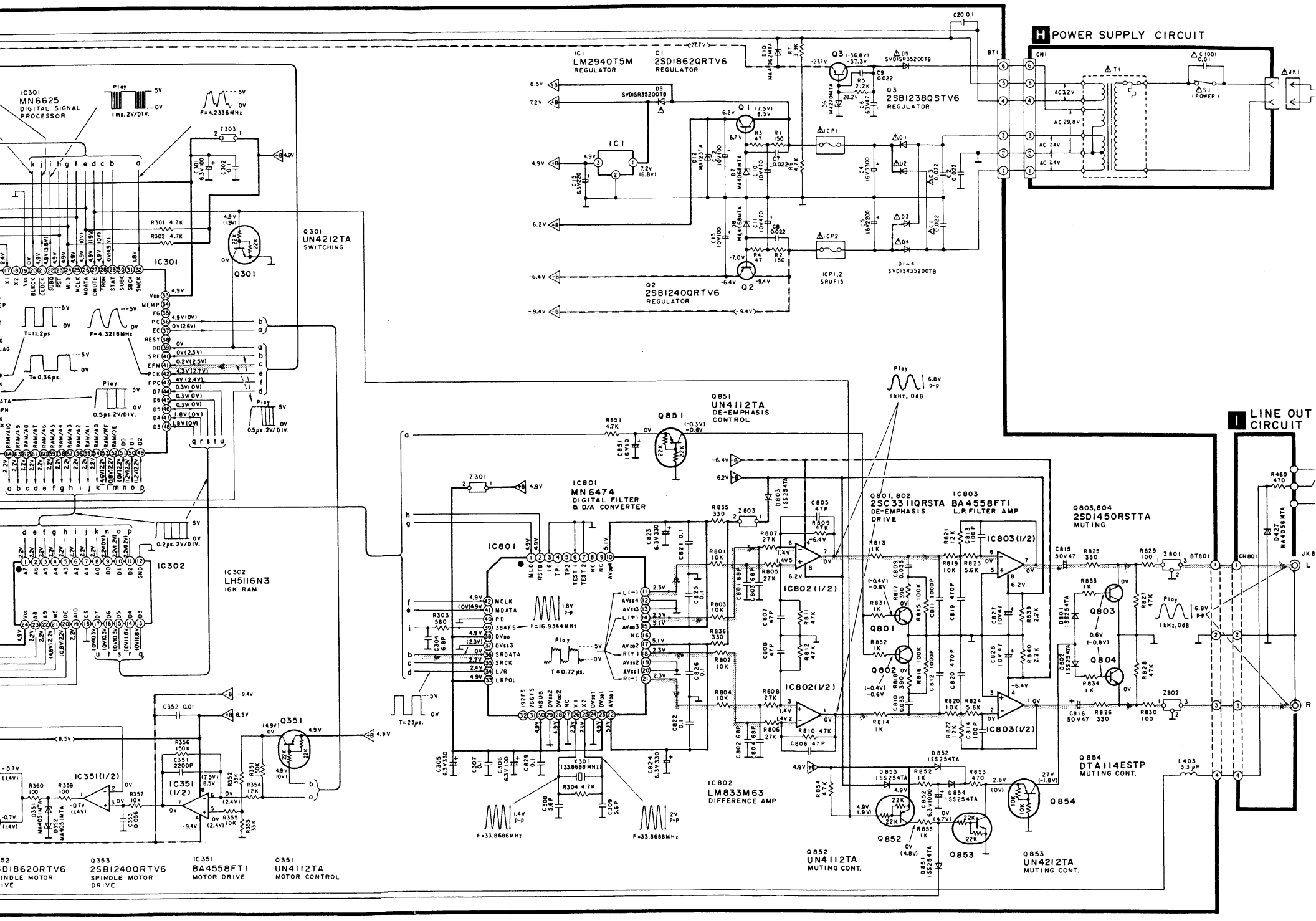
Caution!
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the pins of IC or LSI with fingers directly.

SERVO CIRCUIT PC BOARD – PARTS LIST

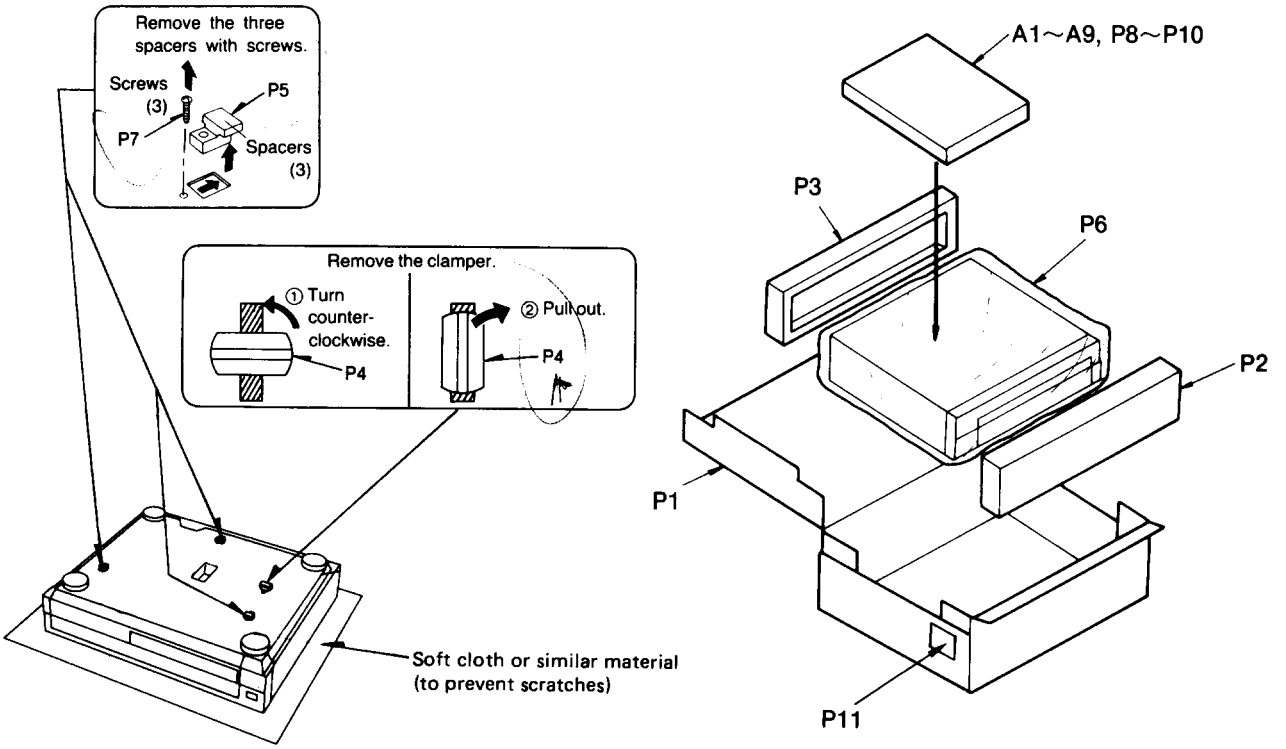
CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
IC101	22240476	AN8373S
IC102	22240477	AN8374S
IC103	22240478	AN8377N




Q411~413
2SA1309QRSTA
SWITCHING(RESET/CLAMP/POSITION)
Q417
2SA1309QRSTA
SWITCHING(REMOTE)
IC401
MN15283PJT-2
SYSTEM CONTROL
IC402
RCD0004
REMOTE CONTROL RECEIVER
IC403
MN15522PKE
REMOTE CONTROL DATA PROCESSING
IC404
BA6247N
MOTOR DRIVE
Q419,420
2SA1309QRSTA
SWITCHING
(OPEN/CLOSE DET.)
Q423
2SA1309QRSTA
SWITCHING
Q401~406,422
UN4212TA
FL DRIVE
Q415,416
UN4212TA
SWITCHING
Q407~410
UN4112TA
MOTOR CONTROL
Q427
UN4112TA
MUTING CONTROL
IC2
M51953BFPTA
RESET
FL401(RSL0047-F)FL DISPLAY
F SENSOR CIRCUIT
LOADING MOTOR CIRCUIT G
D451
SVDGPIS53
POSITION SENSOR
D452
SVDGPIS53
REST SENSOR
S414 (▶ PLAY)
S413 (▮▮PAUSE)
S412 (REPEAT)
S411 (MEMORY)
S410 (▶▶FF)
S409 (◀◀ FR)
S408 (▲ UP)
S407 (▼ DOWN)
S403 (DISC 3)
S402 (DISC 2)
S401 (DISC 1)
S405 (DISC 5)
S404 (DISC 4)
S415 (SHUFFLE)
S416 (■ STOP)
S406 (DISPLAY)
S451 (CLAMP)
M451 (LOADING MOTOR)
DX-C101 only


H POWER SUPPLY CIRCUIT
I LINE OUT CIRCUIT
IC1
LM2940T5M
REGULATOR
Q1
2SD1862QRTV6
REGULATOR
Q3
2SB1238QSTV6
REGULATOR
Q2
2SB1240QRTV6
REGULATOR
IC301
MN6625
DIGITAL SIGNAL PROCESSOR
Q301
UN4212TA
SWITCHING
IC302
LH5116N3
16K RAM
IC801
MN6474
DIGITAL FILTER & D/A CONVERTER
Q851
UN4112TA
DE-EMPHASIS CONTROL
Q801, 802
2SC3311QRSTA
DE-EMPHASIS DRIVE
IC803
BA4558FTI
L.P. FILTER AMP
Q803,804
2SD1450RSTTA
MUTING
IC802
LM833M63
DIFFERENCE AMP
Q852
UN4112TA
MUTING CONT.
Q853
UN4212TA
MUTING CONT.
Q854
DTA114ESTP
MUTING CONT.
IC351
BA4558FTI
MOTOR DRIVE
Q351
UN4112TA
MOTOR CONTROL
Q353
2SB1240QRTV6
SPINDLE MOTOR DRIVE

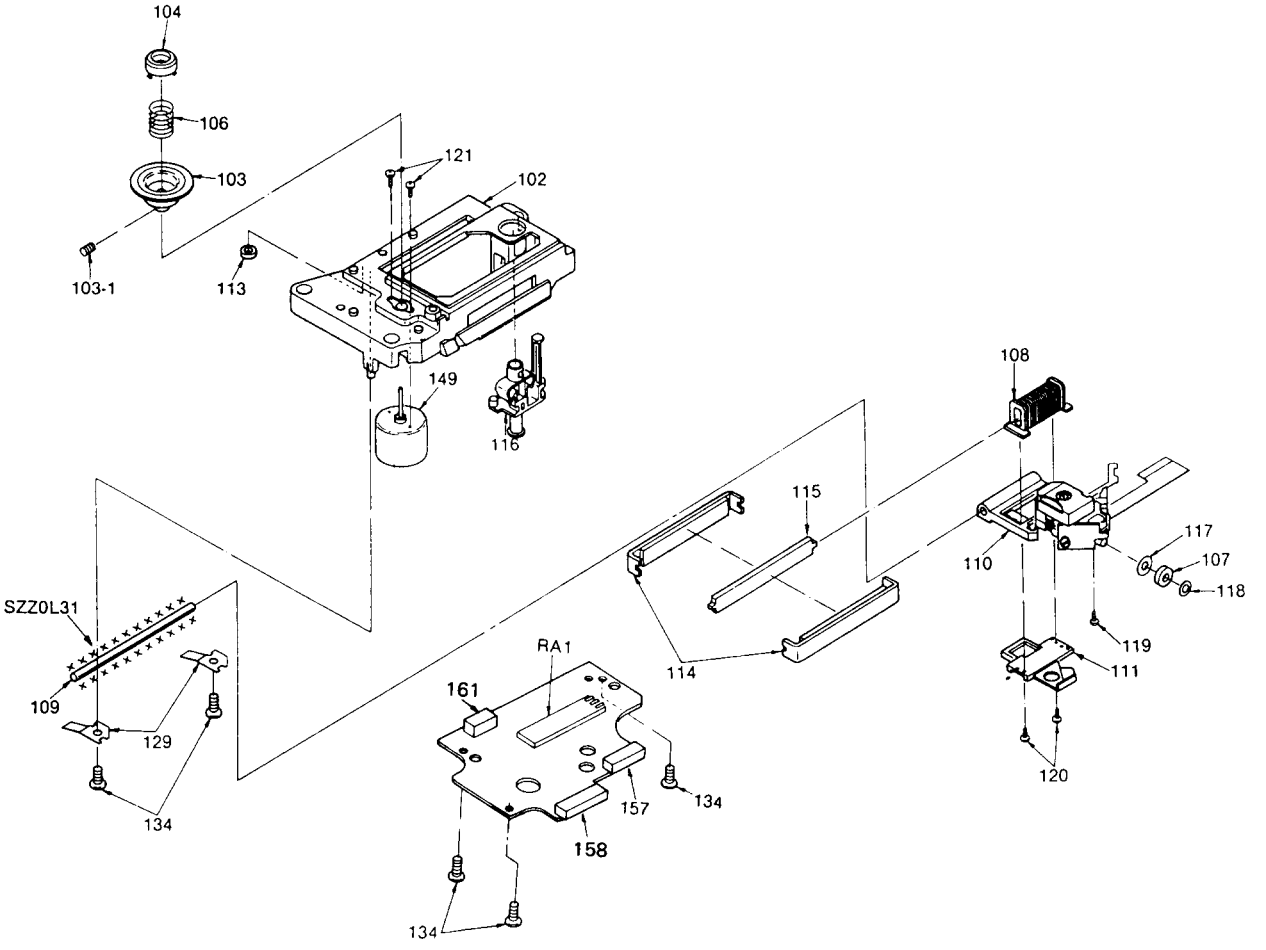
PACKING VIEW



REF.NO.	PART NO.	DESCRIPTION
P1	29052201	Master carton box <DX-C101>
	29052202	Master carton box <DX-C201>
P2	29091493	Pad A
P3	29091494	Pad B
P4	28400587	Clamper
P5	28400588	Clamper
P6	29100113	Protection sheet
P7	801445	Transport screw
P8	29100114	Protection bag (Accessary)
P9	29105161	Accessary box
P10	29100115	Styrene bag
A1	29341600	Instruction manual
	29341601	Instruction manual <Canadian model>
A2	29365019A	Warranty card
A3	29358002J	Service station list
A4	2010211	⚠ SJA172-1,Power supply cord
A5	2010098A	Output cord
A6	2010200	Remote control cord
A7	28400589	Spacer B for mechanism
A8	24140201	RC-201C,Remote control transmitter <DX-C201>
A9	3010054	UM-3,Two batteries <DX-C201>
	29355163	Caution label (on the top cover)
	29355174	Caution label

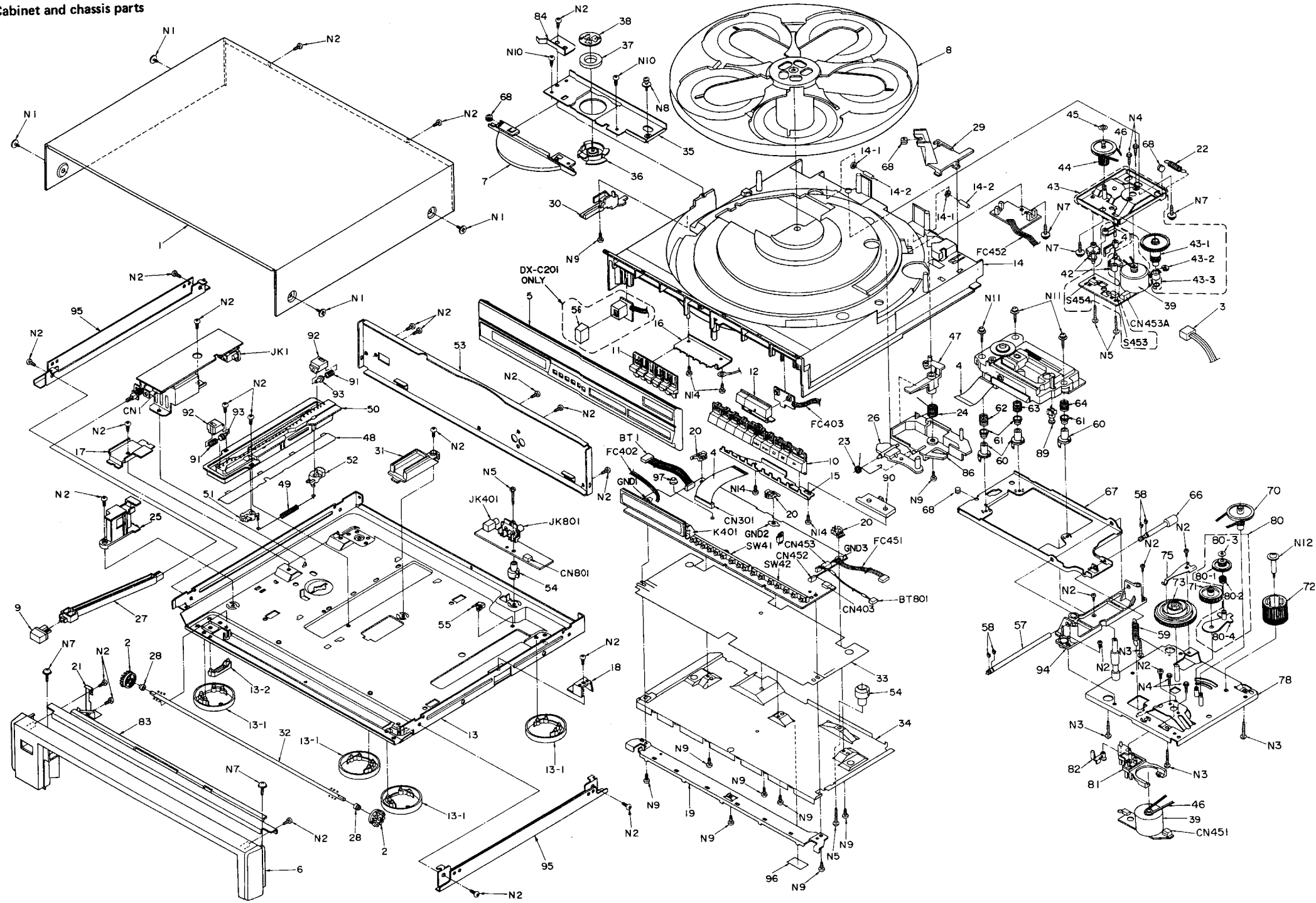
EXPLODED VIEWS

• Traverse deck parts



REF.NO.	PART NO.	DESCRIPTION
	24506933A	Traverse deck ass'y
102	24506934-1	Traverse base
103	24506935-1	Turntable
103-1	801446	Special screw
104	24506936	Ring
106	24503182	Spring
107	24506937-1	Roller
108	24506976	Coil
109	24506939	Guide shaft
110	34506940	⚠ Optical pickup
111	24506941-1	Coil holder
113	24506946	Stopper
114	24506978	Yoke
115	24506943-1	Yoke
116	24506977	Lock unit
117	27270318	Special washer
118	27270319	Special washer
119	801448	Special screw
120	833120050	2TTP+5P,Self tapping screw
121	801447	2SMP.SW+8F,Sems screw
129	24506945-1	Guide shaft holder
134	838130100	3TTB+10P,Self-tapping screw
149	24502258-1	Spindle motor

Cabinet and chassis parts



PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
1	28184492	Top cover
2	27301305-1	Gear,timing
3	2009990088	Connector ass'y
4	2050032	Flat cable
5	27215210	Front panel A ass'y <DX-C101>
	27215211	Front panel A ass'y <DX-C201>
6	27211325	Front panel B ass'y
7	27301306-1	Cover,clamp
8	24506908	Tray,rotary
9	28324382	Konb POWER
10	28324028-1	Knob PLAY
11	28324029	Knob MEMO
12	28324030-1	Knob SKIP
13	27100244	Chassis ass'y
- 13-1	27175248-1	Foot -
13-2	27267676	Bracket
14	28110567	Loading cabinet ass'y
15	27141399	Plate,main
16	27141479	Plate,sub
17	27130613	Guide plate (L)
18	27130654	Guide plate (R)
19	27130615	Operation frame plate
20	27301307	Earth plate
21	27301308	Earth plate,panel
22	27301309	Spring,friction
23	27301310	Spring,lock lever
24	27301311	Spring,set lever
25	27267737	Guide,lead wire
26	27301312-1	Lock lever
27	27273130	Rod,power switch
28	27301313-1	Holder,gear shaft
29	27190770	Tray holder
30	27301314	Cover,lead holder
31	27301315	Cover,lock unit
32	27260295	Timing gear shaft
33	28175173	Insulator plate
34	27150296	Shield plate
35	24506909	Clamp lid
36	24506910-1	Clamper
37	28181025	Magnet
38	24506911	Yoke
39	24502256	Motor ass'y
41	24506975	Switch lever
42	24506914-1	Switch holder
43	27100240	→Loading chassis ass'y
44	24506915	Pulley gear
45	27270320	Washer (A)
46	24506916	Belt
47	24506917	Set lever
48	27141401	Rack cover
49	27301316	Spring, working
50	27301317	Rack plate
51	27301318	Working rack,front
52	27301319	Working rack,rear
53	27121441	Back panel <DX-C101>
	27121442	Back panel <DX-C201>
54	27190771	Pc board support
55	27301320	Cord clamper
56	27301443	Cover, remote control <DX-C201>
57	27260296	Guide shaft
58	893030	E-3,E ring
59	24503176	Spring
60	27270316-1	Spacer, traverse
61	24506973	Floating rubber
62	24503186	Spring (A)
63	24503187	Spring (B)
64	24503188	Spring (C)
66	24506919-1	Roller shaft
67	27100214	Chassis
68	24506920	Cushion,dust cover
70	24506921-1	Gear,pulley
71	24506922	Gear,main
72	24506923	Gear,drive
73	24504429	Elevator cam
75	24503180-1	Spring
78	24506924	Mechanism chassis ass'y
80	24506925	Main arm ass'y
80-1	24506926	Gear
80-2	24503181-1	Spring
80-3	27270317	Special washer
80-4	24506927	Main arm
81	24506928	Holder
82	24506929	Switch lever
83	27130616	Bracket,panel
84	27301321	Earth spring
86	24506930	Plate,lead wire
87	24506931	Guide,roller
88	893040	E-4,E ring
89	28324031	Knob, lock unit
90	27301322	Spacer,knob
91	27301323	Spring,slider
92	27301324	Plate,rack
93	27220040	Slider
94	24506932	Base slider
95	27100245	Sub chassis
N1	801440	Special screw
N2	838430088	3TTB+8B(BC),Self-tapping screw
N3	838130148	3TTB+14B,Self-tapping screw
N4	801441	26SMP.SW+4F,Sems screw
N5	838130168	3TTB+16B,Self-tapping screw
N7	831130088	3TTW+8B,Self-tapping screw
N8	801442	3SMP8W.SW+8F,Sems screw
N9	838430108	3TTB+10B(BC),Self-tapping screw
N10	838130060	3TTB+6P,Self-tapping screw
N11	801443	Special screw
N12	801444	Special screw
N14	838130080	3TTB+8P,Self-tapping screw
T1	2300552	⚠ NPT-C100,Power transformer
A	24505280	Servo pc board ass'y
B	24505302	Main pc board ass'y
C	24505315	Sensor pc board ass'y <DX-C201>
D	24505314	Switch pc board ass'y
E	24505276	Loading motor (1) pc board ass'y
F	24505316	Sensor pc board ass'y
G	24505277	Loading motor (2) pc board ass'y
H	24505317	Power supply pc board ass'y
I	24505303	Line out pc board ass'y

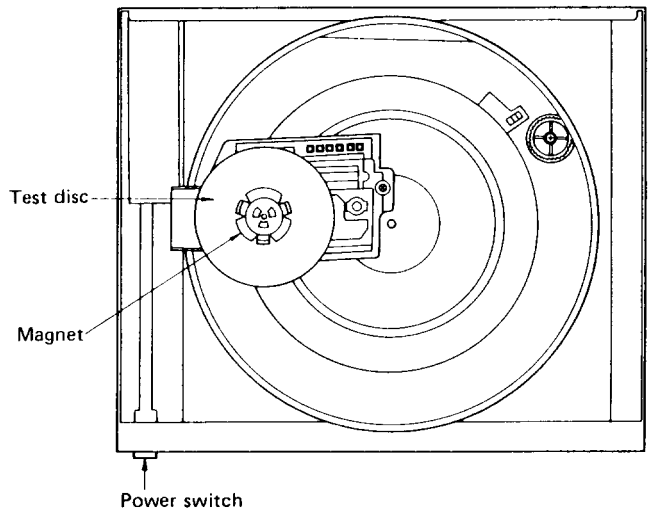
ADJUSTMENT PROCEDURES

Warning : This product uses a laser diode. Refer to caution statements on page 4.

Caution : During adjustment, never connect CH-2 probe's GND to any place for it may short Vref line. (Connect CH-1 probe's GND to specified TP. described in each section.)

PREPARTION

1. Remove the top cover (refer to disassembly instruction Ref. No. 1).
2. Remove the clamp chassis and clamp cover (refer to disassembly instruction Ref. No. 4).
3. (1) The carousel rotates clockwise and stops at the fifth tray.
   (2) Set the power switch to OFF and then to ON again, when the optical deck reaches it's height position, set the power switch to OFF.
4. Remove the disc tray (refer to disassembly instruction Ref. No. 8).
5. Place the test disc and secure it by using the magnet (refer to disassembly instruction Ref. No. 9).
6. Set the unit in the test mode as follows: (hold the **play** , **stop** and **disc 1** keys (3 keys) on and set the power switch to ON.)
7. Follow the adjustment procedure.



Measuring Instruments and Special Tools

- Test discs
1. Test disc (SONY YEDS-18)
2. Black band test disc (NR5A)
- Dual-beam oscilloscope with bandwidth of 30MHz or better (with EXT trigger and 1 : 1 probe).
- Audio frequency (AF) oscillator
- Allen wrench (M2.0)
- Allen wrench (M1.27)
- 0.9 mm clearance gauge

Perform adjustments depend on the part to be replaced according to followings:

(1) Spindle motor ..... Items 1,3 to 8
(2) Turntable ..... Items 1,3 to 8
(3) Optical pickup ..... Items 2 to 8

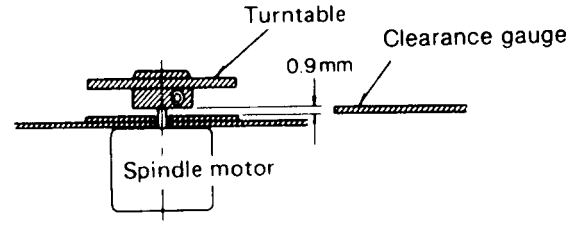
Adjusting Procedure

* If you have replaced the optical pickup, spindle motor, or turntable, do the following adjustment:

(1) TURNTABLE HEIGHT ADJUSTMENT

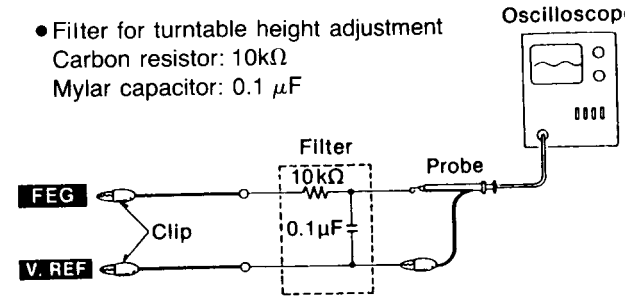
1. Insert the 0.9 mm clearance gauge between the turntable and the loading base (see the figure at right).
2. Tighten the turntable retention screw with the 1.27 mm allen wrench.
3. Connect the oscilloscope's CH. 1 probe across VR104's **FEG** (+) and VR106's **V. REF** (−) terminals via a filter.
   (Note: A voltage of 2.5V appears at the V. REF terminal. Take care not to short the player's chassis to the oscilloscope ground.)
   Oscilloscope setting: VOLT . . . . . 50 mV
   SWEEP . . . . . 1 ms.
   Input coupling . . . DC
4. Adjust oscilloscope's DC zero balance.
5. Switch the player power **ON**, and play the test disc (YEDS-18)
6. Measure the voltage amplitude of the signal on the oscilloscope.

Note 1. If the measured amplitude is within a range of +/− 15 mV, the turntable height is correct. If it is outside this range, adjust the turntable height by using the clearance gauge as a pry.
If the amplitude exceeds +15 mV, lower turntable.
If the amplitude is below −15 mV, elevate the turntable.



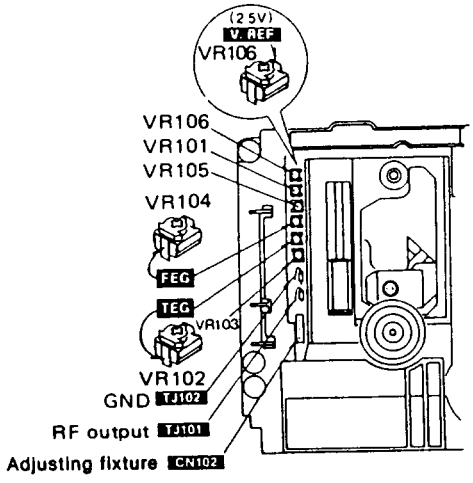
Note 2. If the measured amplitude greatly surpasses or falls short of the range above, set **VR105** at or around the center, then try to adjust the height again. (Then be sure to adjust the focus offset as well.)

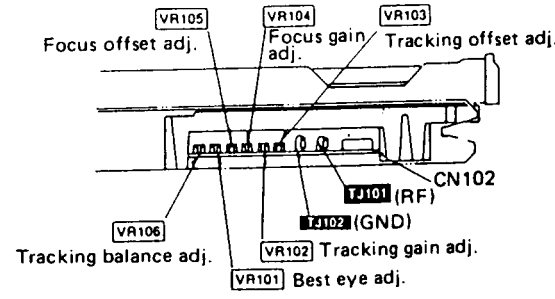
• Filter for turntable height adjustment
Carbon resistor: 10kΩ
Mylar capacitor: 0.1 μF



ADJUSTMENT POINTS

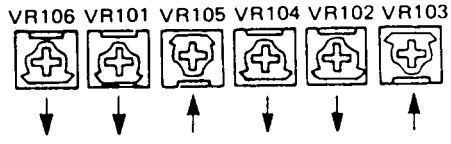
• **Servo P.C.B.**





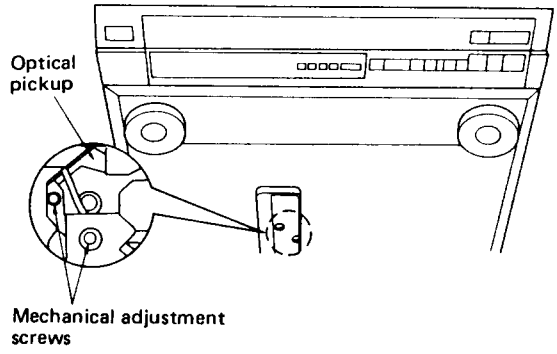
• **Temporary setting of each VR**

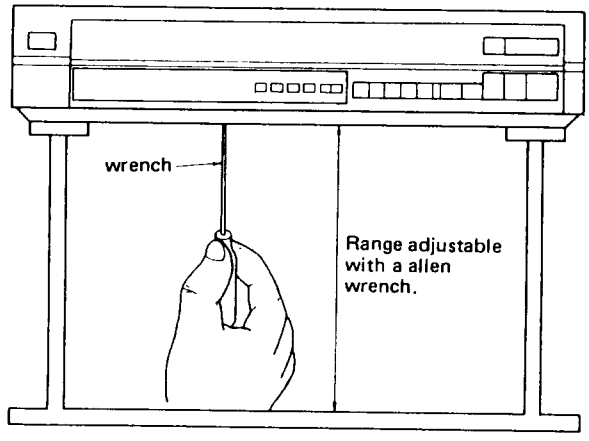
Temporary VR setting if any of the trimmer VRs are replaced or require readjustment, temporarily set them to the following positions:

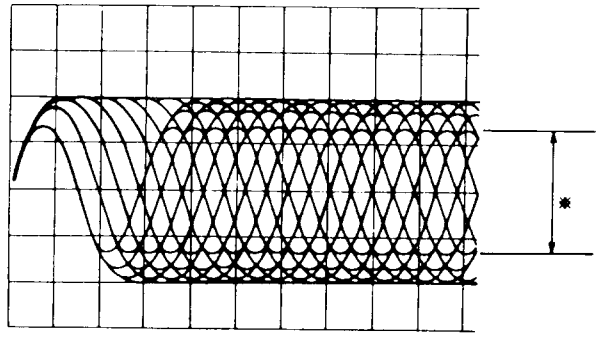


(2) MECHANICAL ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B.
   Oscilloscope setting: VOLT . . . . . 100 mV
   SWEEP . . . . . 0.5 μs.
   Input coupling . . . AC
2. Switch the player power **ON**, and play track 18 on the test disc (YEDS-18). (Playing any other track may yield a false adjustment.)
3. Leave the player in Play mode, and place it as shown in the figure on the right.
4. Alternately adjust the two mechanical adjusting screws with the 2.0mm allen wrench until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched.
5. After completing the adjustment, lock the **mechanical adjustments** with lock paint .



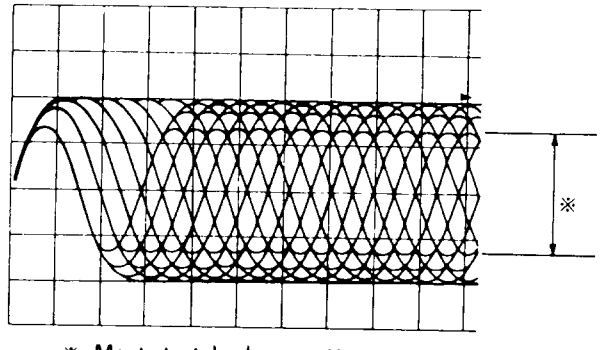




※ Most stretched eye pattern.

(3) BEST EYE (PD BALANCE) ADJUSTMENT

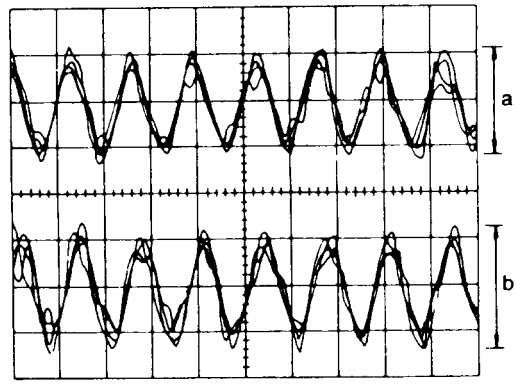
1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B.
   Oscilloscope setting: VOLT . . . . . 100 mV
   SWEEP . . . . . 0.5 μs
   Input coupling . . . AC
2. Switch the player power **ON**, and play the 1 kHz (track 2) on the test disc (YEDS-18).
3. Adjust **VR101** until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched.



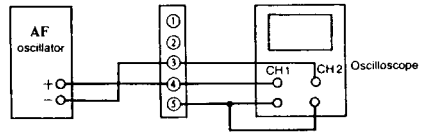
※ Most stretched eye pattern.

(4) FOCUS GAIN ADJUSTMENT

1. Set up the AF oscillator output for **825Hz, 150 mVp-p**, and connect it to pins 3 and 4 of adjusting fixture CN102 on the servo pc board.
2. Connect oscilloscope's CH. 1 and CH. 2 probes to the pins 3 and 4 of CN102, respectively (Pin 5 is GND).
   Oscilloscope setting: VOLT ..... 100 mV
   SWEEP ..... 0.2 ms.
   Input coupling ..... AC
3. Play the track 2 on the test disc (YEDS-18).
4. Adjust **VR104** until the signal amplitudes on both channels become identical to each other.

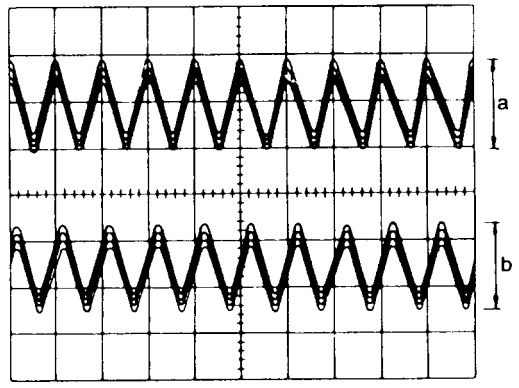


※ Adjust **VR104** until a equals b.

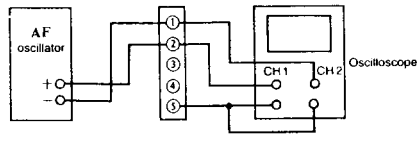


(5) TRACKING GAIN ADJUSTMENT

1. Set up the AF oscillator output for **1.1kHz, 150 mVp-p** and connect it to pins 1 and 2 of adjusting fixture CN102.
2. Connect oscilloscope's CH. 1 and CH. 2 probes to the Pins 1 and 2, respectively (Pin 5 is GND).
   Oscilloscope setting: VOLT ..... 100 mV (both channels)
   SWEEP ..... 0.2 ms.
   Input coupling ..... AC
3. Switch the player power **ON**, and play the track 2 on the test disc (YEDS-18).
4. Adjust **VR102** until the signal amplitudes on both channels become identical to each other.

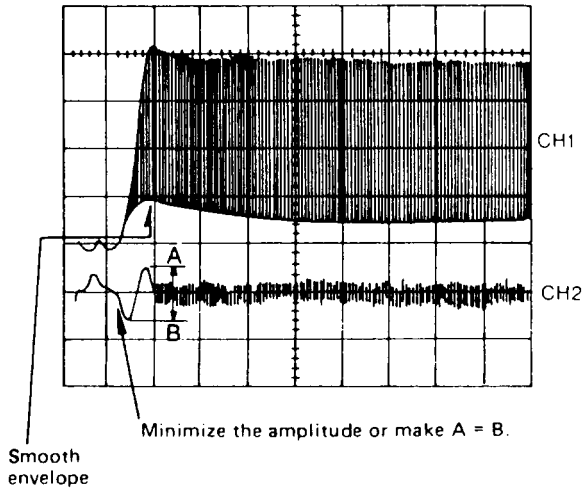


※ Adjust **VR102** until a equals b.



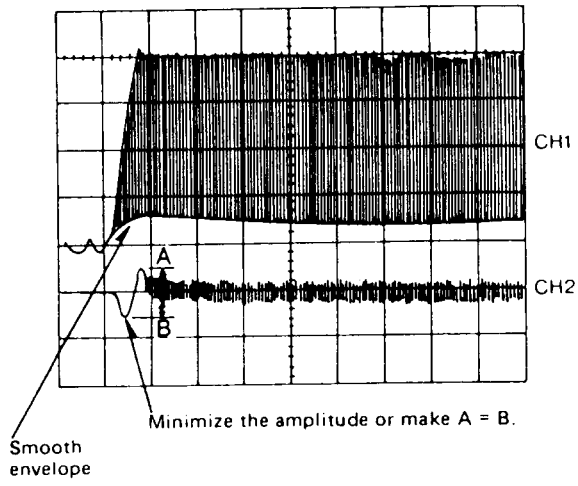
(6) FOCUS OFFSET ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across TJ101 (+) TJ102 (−) on the Servo P.C.B. and its CH. 2 probe (+) to VR104's FEB terminal.
   Oscilloscope setting: VOLT ..... 100 mV (CH. 1)
   100 mV (CH. 2)
   SWEEP ..... 0.2 ms.
   Input coupling ..... AC
   Trigger mode .. NORM (trigger CH. 1)
2. Switch the player power **ON**, and play track 13 on the test disc (NR5A).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR105** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



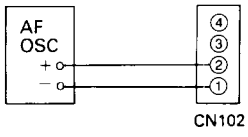
(7) TRACKING OFFSET ADJUSTMENT

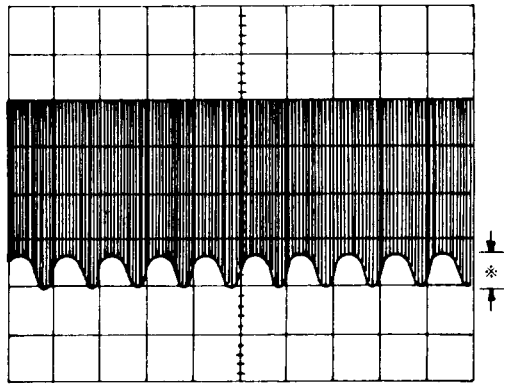
1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B., and its CH. 2 probe (+) to VR102's **TEG** terminal.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   100 mV (CH. 2)
   SWEEP. . . . . .0.2 ms.
   Input coupling. . AC (both CH. 1 and 2)
   Trigger mode. . . NORM (trigger CH. 1.)
2. Switch the player power **ON**, and play track 13 on the test disc (NR5A).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR103** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



(8) TRACKING BALANCE ADJUSTMENT

1. Set up the AF oscillator output for **1.1 kHz, 600 mVp-p**, and connect it to across the pins 1 and 2 of CN102.
2. Connect the oscilloscope's CH. 1. probe across **TJ101** (+) to the pin 2 on the servo pc board.
   Oscilloscope setting: VOLT ..... 100 mV (CH. 1)
   200 mV (CH. 2)
   SWEEP ..... 0.1 ms.
   Input coupling ..... AC (both CH. 1 and 2)
   Trigger mode .. NORM (trigger CH. 2)
3. Switch the player power **ON**, and play the track C of test disc. (YEDS-18)
4. Adjust **VR106** until the section of the waveform marked with * is balanced on CH. 1.





※ This section of the waveform must be balanced.

(9) CHECK OF PLAY OPERATION AFTER ADJUSTMENT

*** Checking Skip Search**

1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

*** Checking Manual Search**

1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

*** Checking Using Defect Disc**

1. Play the 0.7 mm black dot and the 0.7 mm wedge on the defect test disc (NR5A) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc and verify that no sound skip or noise occurs.